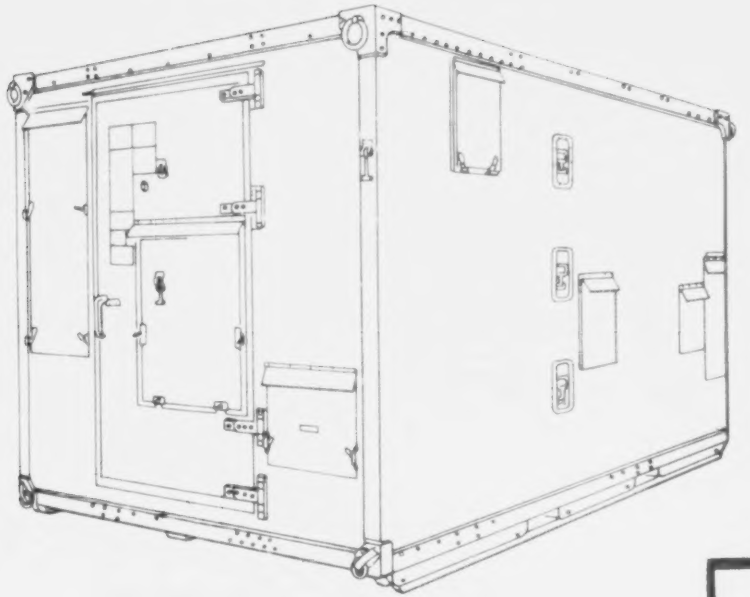
11-5805-585-14-1

TM 11-5805-585-14-1

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL



EQUIPMENT DESCRIPTION PAGE 1-4
FACILITY BLOCK DIAGRAM PRESENTATION PAGE 1-16
SYSTEMS BLOCK DIAGRAM PRESENTATION PAGE 1-29
OPERATING INSTRUCTIONS PAGE 2-1
OPERATOR TROUBLESHOOTING PAGE 3-1
ORGANIZATIONAL MAINTENANCE PAGE 4-1
DIRECT SUPPORT MAINTENANCE PAGE 5-1
GENERAL SUPPORT MAINTENANCE PAGE 6-1

TELEPHONE TERMINAL SETS AN/TCC-73(V)1 (NSN 5805-00-134-5405) AN/TCC-73(V)2 (NSN 5805-00-134-5404) AN/TCC-73A(V)1 (NSN 5805-01-102-0185) AND AN/TCC-73A(V)2 (NSN 5805-01-135-7070) IN SHELTER, ELECTRICAL EQUIPMENT S-419B/TCC-73(V) (NSN 5410-01-098-2393)

This copy is a reprint which includes current pages from Changes 1-2

HEADQUARTERS, DEPARTMENT OF THE ARMY
29 APRIL 1983

D 101.11:

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4 SEND FOR HELP AS SOON AS POSSIBLE

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

CHANGE

No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 5 March 1985

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL TELEPHONE TERMINAL SETS AN/TCC-73(V)1

(NSN 5805-00-134-5405)
AN/TCC-73(V)2
(NSN 5805-00-134-5404)
AN/TCC-73A(V)1
(NSN 5805-01-102-0185)
AND
AN/TCC-73A(V)2
(NSN 5805-01-135-7070)
IN SHELTER, ELECTRICAL
EQUIPMENT S-419B/TCC-73(V)
(NSN 5410-01-098-2393)

TM 11-5805-585-14-1, 29 April 1983, is changed as follows.

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page.

Remove pages	*Insert pages*
i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
2-15 through 2-18	2-15 through 2-18
B-3 through B-6	B-3 through B-6
C-1 through C-20	C-1 through C-20
D-1 and D-2	D-1 and D-2

2. File this sheet in the front of the publication for reference purposes.

By Order of the Secretary of the Army:

JOHN A. WICKHAM JR.
General, United States Army
Chief of Staff

Official:

DONALD J. DELANDRO
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-51A-1, Operator's, Organizational and Direct and General Support Maintenance requirements for AN/TCC-73.

TM 11-5805-585-14-1
C 1

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 21 November 1983

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL
TELEPHONE TERMINAL SETS AN/TCC-73(V)1
(NSN 5805-00-134-5405)
AN/TCC-73(V)2
(NSN 5805-00-134-5404)
AN/TCC-73A(V)1
(NSN 5805-01-102-0185)
AND
AN/TCC-73A(V)2
(NSN 5805-01-135-7070)
IN SHELTER, ELECTRICAL
EQUIPMENT S-419B/TCC-73(V)
(NSN 5410-01-098-2393)

TM 11-5805-585-14-1, 29 April 1983, is changed as follows:

1. New or revised material is indicated by a vertical bar in the margin.

2. Remove old pages and insert new pages as indicated below.

Remove pages	*Insert pages*
C-1 through C-8	C-1 through C-8
C-11 through C-14	C-11 through C-14
C-17 and C-18	C-17 and C-18

3. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

JOHN A. WICKHAM JR.
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:

To be dsitributed in accordance with DA Form 12-51A-1, Operator's Maintenance requirements for AN/TCC-73.

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if personnel fail to observe safety precautions.

Maintenance adjustments of this equipment are made with power applied. Be careful when working near the interior of the equipment, or near the ac power distribution wiring.

WARNING

Ventilation is Essential

To prevent asphyxiation, ventilate the AN/TCC-73(*) at all times when it is occupied.

WARNING

Adequate ventilation should be provided while using trichlorotrifluoroethane. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since trichlorotrifluoroethane dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

WARNING

To avoid injury to personnel, or damage to equipment, only personnel engaged in the actual loading operation should be permitted near the truck, lifting device and assemblage. To eliminate confusion, all instructions must come from the loading crew supervisor.

WARNING

All personnel must remain clear of the truck while the assemblage is lowered onto the truck.

WARNING

To prevent a TEMPEST hazard, disconnect Telephone Set TA-312/PT.

WARNING

To be usable for cleaning, the compressed air squrce must limit the nozzle pressure to no more than 29 lbs per sq in. gage (psig). Goggles must be worn at all times while cleaning with compressed air.

WARNING

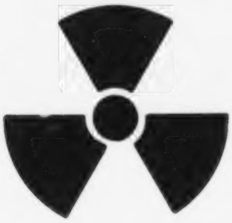
Ensure that the generator set or central power source is off before making any power connections, or disconnecting power cable.

WARNING

Do not operate the CABLE POWER switch of the TD-204/U or the CABLE CURRENT switch of the TD-754/G to ON at either end of the cable link during troubleshooting unless it is requested by the person troubleshooting the cable link. If the CABLE POWER or CABLE CURRENT switch is operated to ON, voltages as high as 1,000 volts may be present in the transmission cable.

WARNING

RADIATION HAZARD



EL3TR001

Electrical Surge Arresters F-1483/G and F-1495/G may each contain 24 type T61-C350 gas-filled surge voltage protectors, which make use of Promethium Fluoride (PM-147). This substance has a total radiation level of approximately 120 microcuries. Use extreme care when installing the arrester to prevent damage to the surge voltage protectors.

WARNING

When troubleshooting the TD-976/G do not attempt to replace SG D/R card 21A9 without first ensuring that cable system power is turned off. Failure to remove cable system power before replacing SG D/R card 21A9 can expose maintenance personnel to potentially lethal voltages and currents.

WARNING

Potentially lethal voltages may be present on exposed ends of teletypewriter equipment transmit and receive cable jacks. Do not touch exposed jack surfaces when making interconnections with RAU. Refer to operating instructions in teletypewriter equipment technical manual before making interconnections between teletypewriter and RAU.

TECHNICAL MANUAL
NO. 11-5805-585-14-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 29 April 1983

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL

TELEPHONE TERMINAL SETS AN/TCC-73(V)1
(NSN 5805-00-134-5405)
AN/TCC-73(V)2
(NSN 5805-00-134-5404)
AN/TCC-73A(V)1
(NSN 5805-01-102-0185)
AND
AN/TCC-73A(V)2
(NSN 5805-01-135-7070)
IN SHELTER, ELECTRICAL
EQUIPMENT S-419B/TCC-73(V)
(NSN 5410-01-098-2393)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. A reply will be furnished to you.

		Page
	HOW TO USE THIS MANUAL	iii
CHAPTER 1	INTRODUCTION	1-1
Section I	General Information	1-1
Section II	Equipment Description	1-4
Section III	Technical Principles of Operation	1-15
CHAPTER 2	OPERATING INSTRUCTIONS	2-1
Section I	Description and Use Of Operator's Controls and Indicators	2-1
Section II	Operator Preventive Maintenance Checks and Services (PMCS)	2-7
Section III	Operation Under Usual Conditions	2-9
Section IV	Operation Under Unusual Conditions	2-84

Page

CHAPTER 3 OPERATOR MAINTENANCE 3-1

Section I Lubrication Instructions 3-1
Section II Operator Troubleshooting Procedures 3-1
Section III Maintenance Procedures 3-35

CHAPTER 4 ORGANIZATIONAL MAINTENANCE 4-1

Section I Repair Parts, Special Tools, TMDE, and Support Equipment 4-1
Section II Organizational Preventive Maintenance Checks and Services (PMCS) 4-2
Section III Organizational Troubleshooting 4-2
Section IV Maintenance Procedures 4-8
Section V Preparation for Storage or Shipment 4-40

CHAPTER 5 DIRECT SUPPORT MAINTENANCE 5-1

Section I Repair Parts, Special Tools, TMDE, and Support Equipment 5-1
Section II Direct Support Troubleshooting 5-1
Section III Maintenance Procedures 5-4

CHAPTER 6 GENERAL SUPPORT MAINTENANCE 6-1

Section I Repair Parts, Special Tools, TMDE, and Support Equipment 6-1
Section II General Support Troubleshooting 6-2
Section III Maintenance Procedures 6-2

APPENDIX A REFERENCES A-1

APPENDIX B MAINTENANCE ALLOCATION CHART B-1

APPENDIX C COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST C-1

APPENDIX D ADDITIONAL AUTHORIZATION LIST D-1

APPENDIX E EXPENDABLE SUPPLIES AND MATERIALS LIST E-1

GLOSSARY .... Glossary 1

INDEX .... Index 1

FOLDOUTS FO-1

HOW TO USE THIS MANUAL

This manual is designed to help you operate and maintain the AN/TCC-73(*). The front cover table of contents is provided for quick reference to important information. There is also an index located in the final pages for use in locating specific items of information.

Read all preliminary information found at the beginning of each task. It has important information and safety instructions you must follow before beginning the task.

Warning pages are located in the front of this manual. You should learn the warnings before operating or doing maintenance on the equipment.

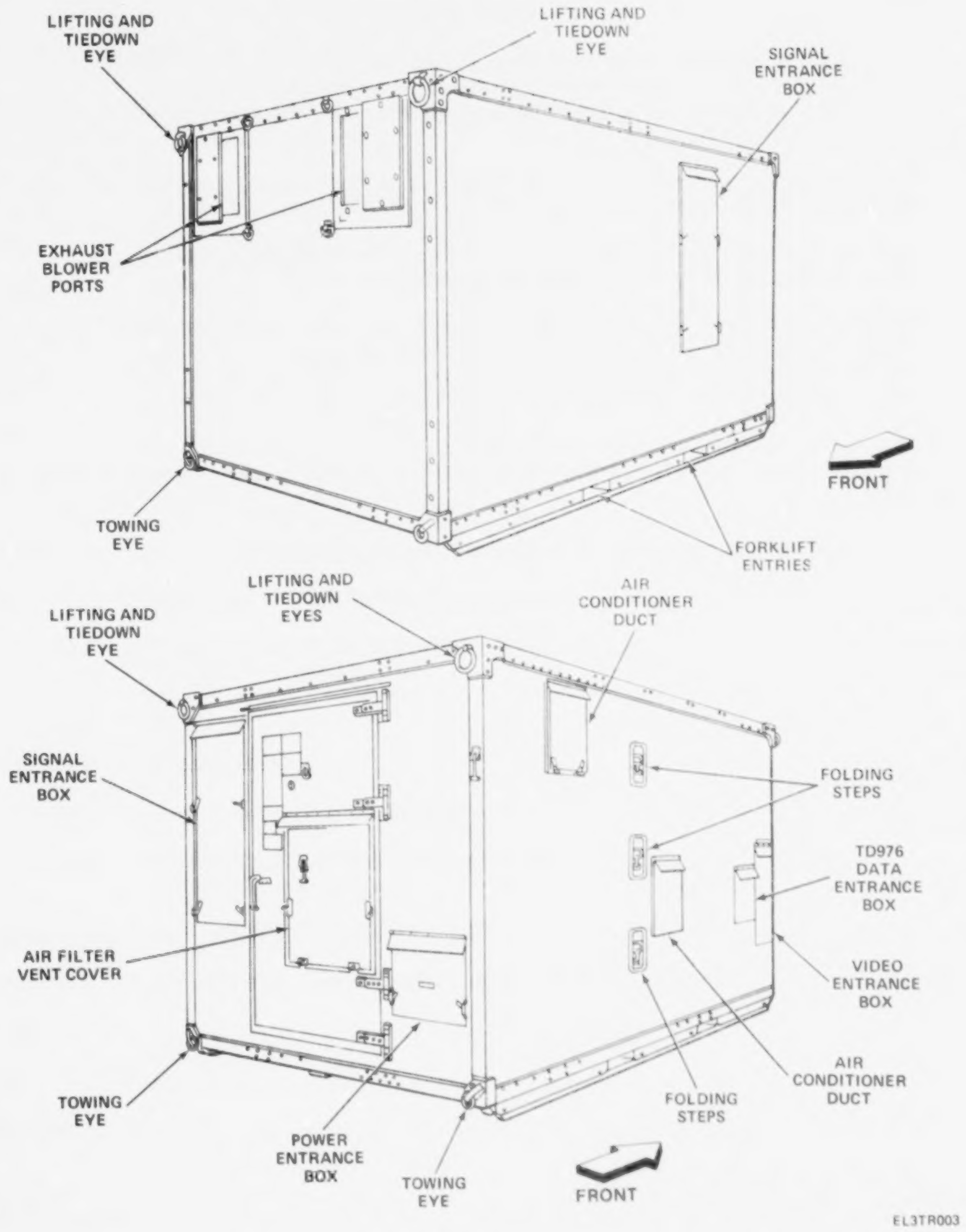
Paragraphs in this manual are numbered by chapter and order of appearance within a chapter. A subject index appears at the beginning of each chapter listing sections that are included in that chapter. A more specific subject index is located at the beginning of each section to help you find the exact paragraph you're looking for.

This manual covers four different models. Applicable model numbers will be listed in paragraph titles. If paragraphs are applicable to all four models, model numbers will not be listed

Instructions for performing operator PMCS are located in paragraph 2-7.

Instructions for using operator troubleshooting tables are located in paragraph 3-2.

Instructions for using organizational troubleshooting tables are located in paragraph 4-5.


LIFTING AND TIEDOWN EYE
LIFTING AND TIEDOWN EYE
SIGNAL ENTRANCE BOX
EXHAUST BLOWER PORTS
FRONT
TOWING EYE
FORKLIFT ENTRIES
LIFTING AND TIEDOWN EYES
AIR CONDITIONER DUCT
LIFTING AND TIEDOWN EYE
SIGNAL ENTRANCE BOX
FOLDING STEPS
TD976 DATA ENTRANCE BOX
AIR FILTER VENT COVER
VIDEO ENTRANCE BOX
AIR CONDITIONER DUCT
TOWING EYE
FOLDING STEPS
POWER ENTRANCE BOX
TOWING EYE
FRONT
EL3TR003

CHAPTER 1

INTRODUCTION

Subject	Section	Page
General Information	I	1-1
Equipment Description	II	1-4
Technical Principles of Operation	III	1-15

Section I GENERAL INFORAMTION

Subject	Para	Page
Scope	1-1	1-1
Maintenance Forms, Records, and Reports	1-2	1-2
Hand Receipt (-HR) Manuals	1-3	1-2
Reporting Equipment Improvement Recommendations (EIR)	1-4	1-2
Destruction of Army Electronics Materiel	1-5	1-2
Administrative Storage	1-6	1-2
Nomenclature Cross-Reference List	1-7	1-3
List of Abbreviations	1-8	1-3
Security Classification Markings	1-9	1-3

1-1. SCOPE.

Type of Manual: This manual covers operator's, organizational, direct support, and general support levels of maintenance for the Telephone Terminal Set AN/TCC-73(*).

Equipment Name and Model Number: The four facilities described in this manual are telephone terminal sets. Model numbers are AN/TCC-73(V)1, AN/TCC-73(V)2, AN/TCC-73A(V)1, and AN/TCC-73A(V)2. For differences between models, see paragraph 1-12. Throughout this manual, AN/TCC-73(*) will be used to indicate all terminal sets.

Multiplexer TD-660(*)/G and Telephone Signal Converter CV-1548(*)/G will be used throughout this manual to designate either TD-660/G, TD-660A/G, or TD-660B/G and CV-1548/G or CV-1548A/G, unless otherwise specified.

Purpose of Equipment: The Telephone Terminal Set AN/TCC-73(*) is an air or vehicular transportable unit used to provide secure or nonsecure multiplex terminal or repeater facilities for Army area communications systems using pulse code modulation.

1-1.1 Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

REPORT OF PACKAGING AND HANDLING DEFICIENCIES

Fill out and forward SF 364, Report of Discrepancy (ROD), as prescribed in AR 735-11-2/DLAR 4140.55.

DISCREPANCY IN SHIPMENT REPORT (DISREP) (SF 361)

DLAR 4140.55.
Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38.

1-3. HAND RECEIPT (-HR) MANUALS.

This manual has a companion document with a TM number followed by "-HR" (which stands for Hand Receipt). The TM 11-5805-585-14-2-HR for AN/TCC-73(V)2 consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., components of end item list, basic issue items list, and additional authorization list) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the US Army Adjutant General Publications Center in Baltimore, Maryland, in accordance with the procedures in chapter 3, AR 310-2, and DA Pam 310-10-2.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your Telephone Terminal Set AN/TCC-73(*) needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth. ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. A reply will be sent to you.

1-5. DESTRUCTION OF ARMY ELECTRONICS MATERIEL.

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2. Comsec equipment and keying information has first priority. In addition to the above listed procedure, refer to KOA-133( ) TSEC for additional information on the TSEC/KG-27.

1-6. ADMINISTRATIVE STORAGE.

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Before storage, comsec equipment must be removed and turned in to the comsec account custodian. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraphs 4-42 through 4-48.

1-7. NOMENCLATURE CROSS-REFERENCE LIST.

This list contains common names used throughout this manual in place of official nomenclature.

Common Name	Official Nomenclature
facility	Telephone Terminal Set AN/TCC-73(*)
shelter	Shelter AN/TCC-73(V)
telephone	Telephone Set TA-312/PT
TSEC/KG-27	Key Generator TSEC/KG-27
ladder	vehicle boarding ladder
signal converter	Telephone Signal Converter CV-1548/G

1-8. LIST OF ABBREVIATIONS.

This list contains abbreviations used in this manual.

Abbreviation	Word or Term
b/s	bits per second
comsec	communications security
db	decibel
Hz	Hertz
kb/s	kilo bits per second
kHz	kilohertz
mv	millivolts
nsec	nanosecond
pcm	pulse code modulation
ppm	parts per million
TAMMS	The Army Maintenance Management System
tdm	time division multiplex
TSEC	top secret
vac	volts alternating current
vf	voice frequency
w	watts

1-9. SECURITY CLASSIFICATION MARKINGS.

This manual references classified documents, (see appendix A). The following codes tell you the classification of the title and contents of the manual:

a. When a (U) appears before the title of the document, it means that the title of the document is unclassified.

b. When a (C) appears before the document number, it means the contents of the document is classified confidential.

Section II EQUIPMENT DESCRIPTION

Subject	Para	Page
Equipment Characteristics, Capabilities, and Features	1-10	1-4
Location and Description of Major Components	1-11	1-4
Differences Between Models	1-12	1-12
Equipment Data	1-13	1-13

1-10. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

CHARACTERISTICS

Transportable by air or vehicle.
Provides secure or nonsecure multiplex terminal or repeater facilities.
Uses pulse code modulation.
Incorporates TSEC/KG-27 equipment.
Shelter is fully insulated and weatherproofed.
Power and signal wiring is housed in ducts.
Storage areas and mounting fixtures provided for spares and accessory items.
Exhaust blowers are wall mounted.

CAPABILITIES AND FEATURES

Capable of secure or nonsecure operations.

Contains the ability to multiplex 96 channels on one system.

Provides a number of low speed data subscribers access to a single channel of a multichannel system with the TD-1069/G installed.

Provides access of digital data to channels of the multichannel system with the TD-1065/G installed.

AN/TCC-73(*) is primarily a cable terminal. It also can be used as a repeater or combination of both and may be used with the following:

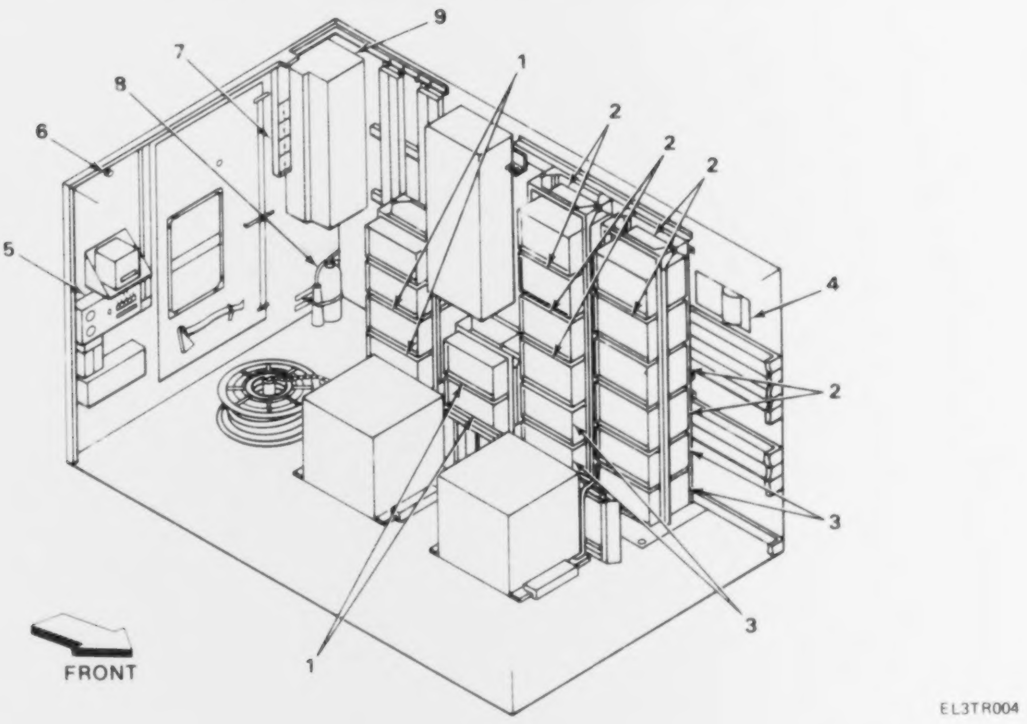
Radio Terminal Set AN/TRC-112
Radio Terminal Set AN/TRC-121
Radio Repeater Set AN/TRC-111
Radio Repeater Set AN/TRC-138

It is modified to accept multiplexer TD-976/G, TD-1065 and/or TD-1069/G for increasing radio or cable channel capacity.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

This paragraph identifies the location of major components and describes the purpose of the equipment for the operator. Only information concerning equipment operation at the operator level is covered.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)



1 TELEPHONE SIGNAL CONVERTERS. Telephone Signal Converters CV-1548-G and CV-1548A/G. Provide telephone signal conversion for 12 circuits. These converters have a switchable capability to accept a combination of two- or four-wire circuits or four-wire straight-through patching capability.

2 MULTIPLEXER. Multiplexer TD-660/G, TD-660A/G, and TD-660B/G. Encodes and decodes 6 or 12 four-wire vf circuits to a tdm-pcm 12-channel signal.

3 DATA BUFFER TD-1065/G. Provides for access of data at 16 or 32 kb/s to any channel of the 12-channel signal produced by multiplexer TD-660(*)/G.

4 SWITCH BOX. Provides for TD-1069/G access to channel 7 of the 12-channel signal produced by TD-660(*)/G through associated TD-1065/G (systems 1 and 2).

5 POWER DISTRIBUTION PANEL. Provides ac power to the telephone terminal set facility. Monitors voltage and current being received from the external power source.

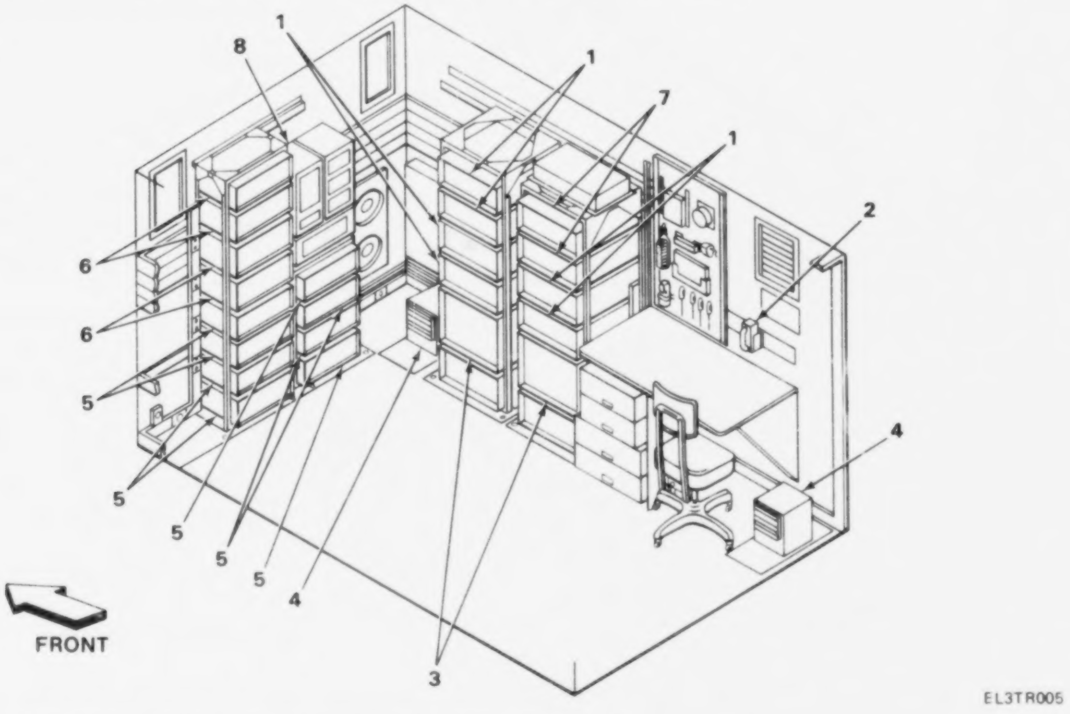
6 POWER INDICATOR LAMP. Lights when external power is supplied to the power entrance box.

7 LIGHTING CONTROLS. Provides ac power to the bypass/blackout system, fluorescent lights, and incandescent cold start lights.

8 FIRE EXTINGUISHER. CO^2-type extinguisher for electrical fires.

9 SIGNAL ENTRANCE BOX. The telephone circuit line connections are made at the signal entrance box. Switching capability is provided for switching from binding posts to cables according to system application.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)



CURBSIDE AND FRONT WALL VIEW, AN/TCC-73A(V)1 AND A(V)2

1 MULTIPLEXER TD-754/G. The multiplexer TD-754/G is a 12- or 24-channel pcm cable transmission interface unit. This multiplexer processes tdm-pcm input and output signals from the TD-660/G. Multiplexer TD-754/G is interchangeable with the TD-204/U and provides capability for transmission of pcm pulses through a cable transmission system.

2 TELEPHONE SET. Telephone Set TA-312/PT provides local communication.

3 MULTIPLEXER TD-976/G. Multiplexer TD-976/G multiplexes and demultiplexes from one to eight inputs from a combination of TD-660(*)/G, TD-754/G, and TD-976/G multiplexers or other compatible data sources. The multiplexer TD-976/G is used in the (V)1 configuration only.

4 HEATERS NO. 1 and 2. Provides heated air when needed.

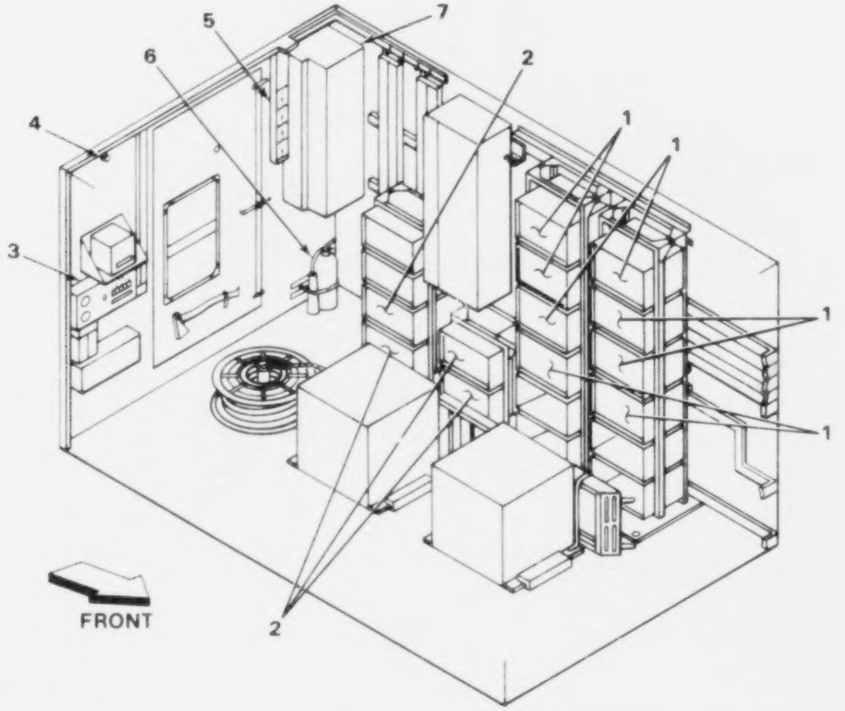
5 KEY GENERATOR TSEC/KG-27. Used for secure communications. For description and operation of the Key Generator TSEC/KG-27, see KAO-133( )/TSEC.

6 DATA BUFFER TD-1065/G. See description on previous page.

7 MULTIPLEXER TD-1069/G. Multiplexes and demultiplexes up to 12 channels of low speed digital data or teletypewriter signals.

8 PATCH PANEL. Provides for the system configuration, reconfiguration or testing of installed equipment.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)



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ROADSIDE AND ENTRANCE WALL VIEW, AN/TCC-73(V)1 and (V)2

1 MULTIPLEXER. Multiplexer TD-660/G, TD-660A/G, and TD-660B/U. Multiplexes and demultiplexes 6 or 12 four-wire voice frequency (vf) circuits to a tdm-pcm 12-channel signal.

2 TELEPHONE SIGNAL CONVERTERS. Telephone Signal Converters CV-1548/G and CV-1548A/G. Provide telephone signal conversion for 12 circuits. These converters have switchable capability to accept a combination of two- or four-wire circuits or four-wire straight-through patching capability.

3 POWER DISTRIBUTION PANEL. Provides ac power to the telephone terminal set facility. Monitors voltage and current being received from the external power source.

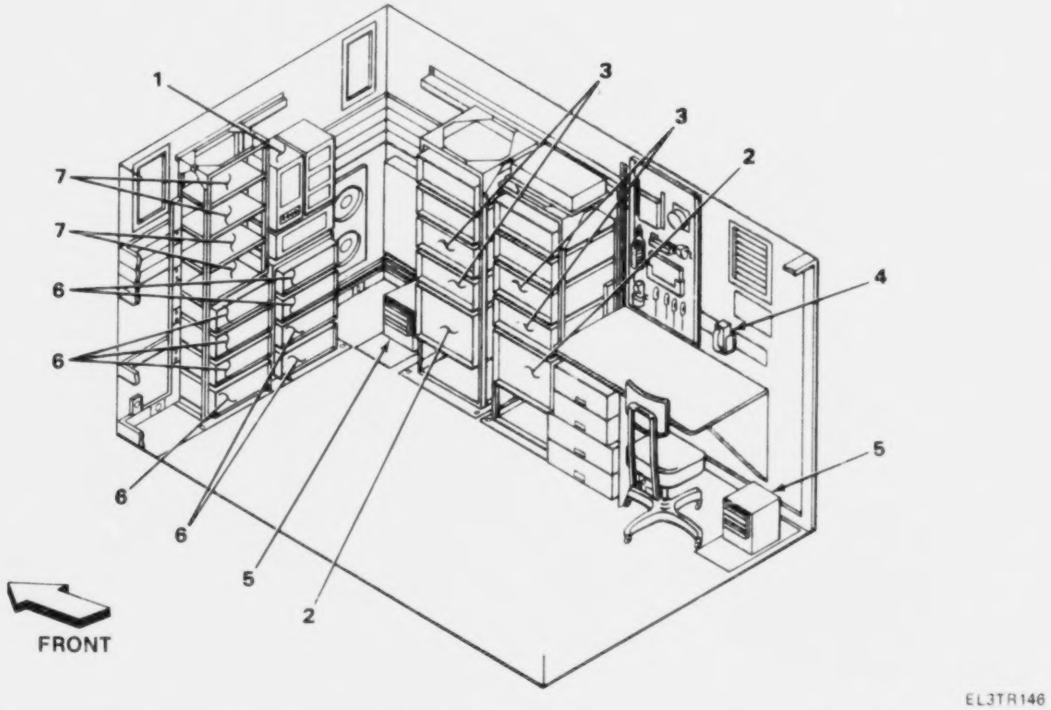
4 POWER INDICATOR LAMP. Lights when external power is supplied to the power entrance box.

5 LIGHTING CONTROLS. Provides ac power to the bypass/blackout system, fluorescent lights, and incandescent cold start lights.

6 FIRE EXTINGUISHER. CO^2-type extinguisher for electrical fires.

7 SIGNAL ENTRANCE BOX. The telephone circuit line connections are made at the signal entrance box. Switching capability is provided for switch from binding posts to cables according to system application.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)



CURBSIDE AND FRONT WALL VIEW, AN/TCC-73(V)1 and (V)2

1 PATCH PANEL. Provides for the system configuration, reconfiguration or testing of installed equipment.

2 MULTIPLEXER TD-976/G. Multiplexer TD-976/G multiplexes and demultiplexes from one to eight inputs from a combination of TD-660A/G, TD-754/G, and TD-976/G multiplexers or other compatible data sources. The multiplexer TD-976/G is used in the (V)1 configuration only.

3 MULTIPLEXER TD-754/G. The multiplexer TD-754/G is a 12- or 24-channel pcm cable transmission interface unit. This multiplexer processes tdm-pcm input and output signals from the TD-660/G. Multiplexer TD-754/G is interchangeable with the TD-204/U and provides capability for transmission of pcm pulses through a cable transmission system.

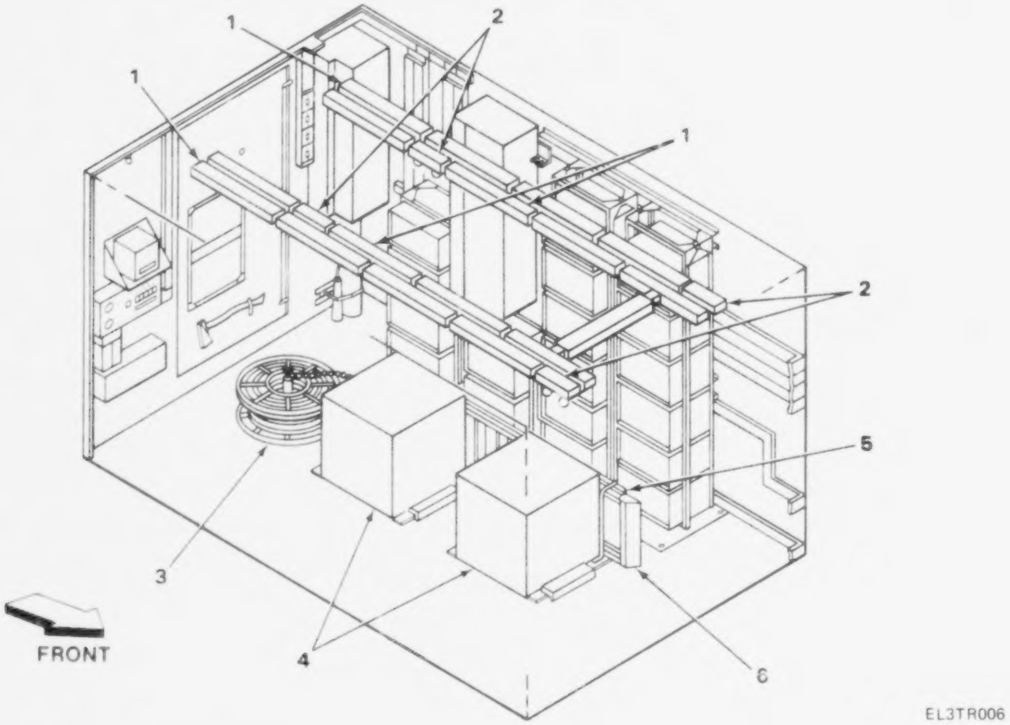
4 TELEPHONE SET. Telephone Set TA-312/PT provides local communication.

5 HEATERS NO. 1 AND 2. Provide heated air when needed.

6 KEY GENERATOR TSEC/KG-27. Used for secure operations. For description and operation of the Key Generator TSEC/KG-27, refer to KAO-133( )/TSEC.

7 TELEPHONE SIGNAL CONVERTER. Telephone Signal Converters CV-1548/G and CV-1548A/G. Provides telephone signal conversion for 12 circuits. These converters have a switchable capability to accept a combination of two- or four-wire circuits or four-wire straight-through patching capability.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)



CEILING AND FLOOR VIEW, AN/TCC-73(*)

1 FLUORESCENT LAMPS. Provide general lighting for the terminal set.

2 INCANDESCENT COLD START LAMPS. Provide heat for fluorescent lamps when temperatures are too low for fluorescent lamp operation.

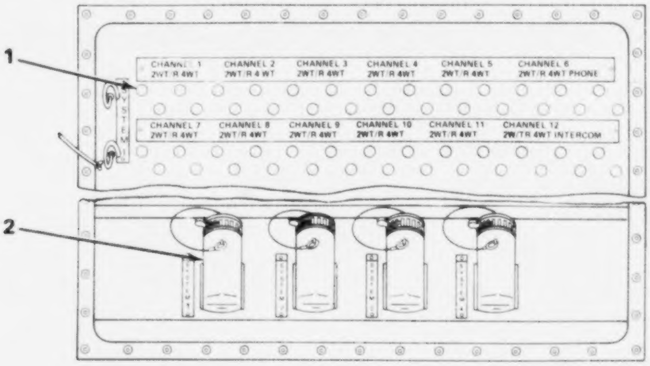
3 POWER CABLE REEL. Contains power cable for connecting the external power source to the power entrance box receptacles of the terminal set (shown in stored position).

4 BLOWER AND COVER. Used to circulate air and remove contaminants. Cover protects blower during shipment (shown in stored position).

5 FOLDING CHAIR AND CUSHION. Additional chair used by equipment operator (shown in stored position).

6 BOARDING LADDER. Provides access to the telephone terminal set facility when mounted above ground level (shown in stored position).

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)

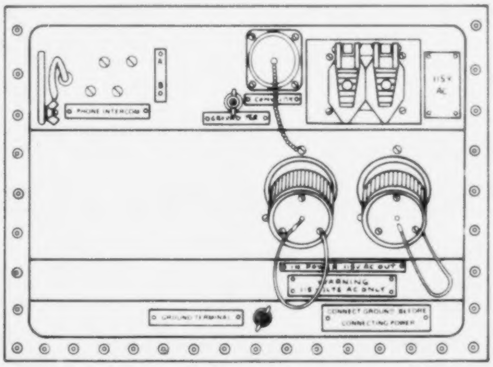

1
2
CHANNEL 1 2WT/R 4WT
CHANNEL 2 2WT/R 4 WT
CHANNEL 3 2WT/R 4WT
CHANNEL 4 2WT/R 4WT
CHANNEL 5 2WT/R 4WT
CHANNEL 6 2WT/R 4WT PHONE
CHANNEL 7 2WT/R 4WT
CHANNEL 8 2WT/R 4WT
CHANNEL 9 2WT/R 4WT
CHANNEL 10 2WT/R 4WT
CHANNEL 11 2WT/R 4WT
CHANNEL 12 2W/TR 4WT INTERCOM
SYSTEM 1

EL3TR196

SIGNAL ENTRANCE BOX (OUTSIDE VIEW)

1 BINDING POSTS. Telephone circuit line connections are made at the binding posts. Two-wire transmit and receive (2WT/R) or four-wire transmit and receive (4WT) connections are made for each channel. Local phone and intercom binding posts are also provided.

2 26-PAIR RECEPTACLES. Using 26-pair cables, telephone circuit line connections are made at the receptacles. Each receptacle consists of 12 four-wire channels, a two-wire phone and a two-wire intercom.

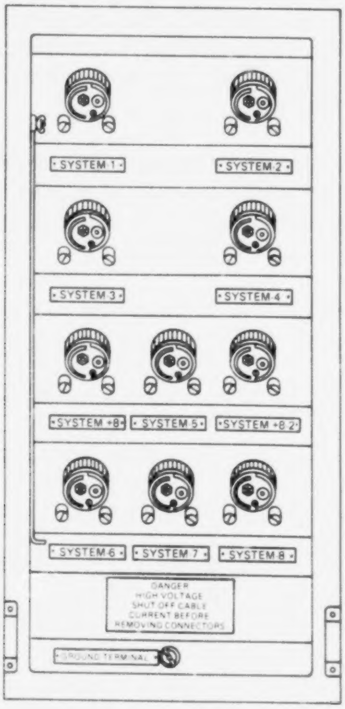

PHONE INTERCOM
A
B
115 V AC
WARNING 115 VOLTS AC ONLY
GROUND TERMINAL
CONNECT GROUND BEFORE CONNECTING POWER

EL3TR197

POWER ENTRANCE BOX

Provides for connection to an external power source through POWER 115 VAC IN or OUT watertight receptacles. If the POWER 115 VAC IN receptacle is damaged, the POWER 115 VAC OUT receptacle can be used to power the shelter.

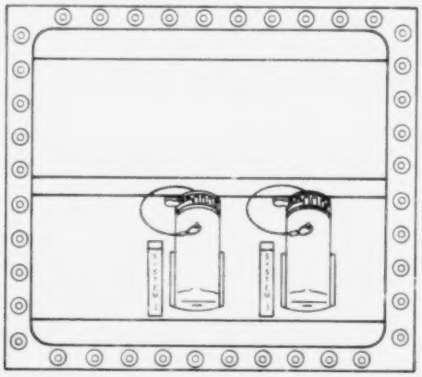
1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. (CONT)


SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM +8
SYSTEM 5
SYSTEM +8 2
SYSTEM 6
SYSTEM 7
SYSTEM 8
DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
GROUND TERMINAL

EL3TR198

VIDEO ENTRANCE BOX (OUTSIDE VIEW)

PCM cable connections are made to the AN/TCC-73(*) through the video receptacles.


SYSTEM 2
SYSTEM 1

EL3TR199

DATA ENTRANCE BOX

The data entrance box contains two TD-1069/G 26-pair receptacles. Each 26-pair receptacle provides the TD-1069/G with access to 12 channels of low speed data or teletypewriter signals.

1-12. DIFFERENCES BETWEEN MODELS.

The Telephone Terminal Set AN/TCC-73(*) may be changed between (V)1 or (V)2 configurations by the installation or removal of the TD-976/G. The AN/TCC-73(V)1 contains, in addition to all the equipment given for the AN/TCC-73(V)2, two TD-976/Gs. The addition of the TD-976/G increases the radio or cable system channel capacity from four 12-channel or four 24-channel ((V)2 model), to one 96-channel or two 48-channel ((V)1 model).

The AN/TCC-73A(V)1 and AN/TCC-73A(V)2 configurations each contain provisions for the installation of up to eight TD-1065/G data buffers in addition to all the equipment given for the AN/TCC-73(V)2 configuration. The TD-1065/G provides digital access to high speed data in addition to wideband secure voice data at 16 or 32 kb/s. The AN/TCC-73A(V)1 also contains two TD-976/Gs.

The table below indicates the type and quantity of equipment characteristic of each AN/TCC-73(*) configuration.

EQUIPMENT	AN/TCC-73(V)1	AN/TCC-73(V)2	AN/TCC-73A(V)1	AN/TCC-73A(V)2
TD-1065/G			8*	8*
TSEC/KG-27*	8	8	8*	8*
CV-1548/G	8	8	8	8
TD-660/AG	8	8	8	8
TD-754/G or TD-204/U	4	4	8	8
TD-976/G	2		2	
TD-1069/G*			2*	2*
TA-312/PT	1	1	1	1
LS-147C/FI	1	1	1	1

*Additional Authorized Components. Upon the installation of these components, removal of existing components may be necessary.

1-13. EQUIPMENT DATA.

POWER REQUIREMENTS:

Input voltage	115 ac, ±6 v; 50 to 60 Hz, single phase

Power Consumption:

Incandescent lights (8)	200 w
Power distribution panel	4 w
Exhaust blowers (2)	500 w
Fluorescent lights (17)	340 w
Electric heater	3,000 w
Multiplexers:	
TD-660/G (8)	360 w
or	
TD-660A/G (8)	360 w
or	
TD-660B/G (8)	640 w
TD-204/U (4)	248 w

1-13. EQUIPMENT DATA. (CONT)

POWER REQUIREMENTS: (CONT)

Power Consumption: (CONT)

TD-754/G (4)	140 w
TD-976/G (2)	300 w ((V)1 configuration only)
TD-1065/G (8)	240 w (AN/TCC-73A only)
TD-1069/G (2)	160 w (AN/TCC-73A only)
Telephone signal converters (CV-1548/G):	
AN/TCC-73	136 w (idle), 480 w (all channels ringing)
AN/TCC-73A	68 w (idle), 240 w (all channels ringing)
TSEC/KG-27 (8)*	320 w
LS-147C/FI (1)	40 w
Total Maximum Power Consumption:	6,336 w

*TSEC/KG-27 is required for secure operations, but is not supplied with the assemblage.

TELEPHONE SIGNAL INPUTS AND OUTPUTS:

Number of channels (per system)	12
Operating modes (selected independently in each channel)	20 Hz signaling, 2-wire, plug supervision signaling (one way from originator to terminator); no signaling, 2-wire (hybrid only use); no signaling, 4-wire (channel patched straight through)
20 Hz signaling, 2-wire:	
from subscriber	20 Hz ringing voltage at 16 volts minimum
to subscriber	20 Hz ringing at 75 volts minimum (across four lines simultaneously)
Plug supervision signaling, 2-wire	Open or close tip (T) or ring (R)
Channel characteristics (2-wire):	
insertion loss	4.5 db maximum (250 to 3,500 Hz)
input and output impedance	600 ohms (balanced to ground)

PULSE CODE MODULATION (PCM) CABLE CHARACTERISTICS:

Pulse type	Binary dipulse
Pulse amplitude,	
to cable	2 v peak-to-peak
from cable	30 mv peak-to-peak nominal
Input and output impedance	62 ohms
Bit rate	1,152 kHz
Half interval	868 nsec
Cable type	CX-4245/G or equivalent

1-13. EQUIPMENT DATA. (CONT)

PULSE CODE MODULATION (PCM) CABLE CHARACTERISTICS: (CONT)

Order wire (facility)	Baseband channel, independent of traffic
Frequency response	300 to 1,700 Hz
Signaling frequency	1,600 Hz
Transmit level	9 v rms minimum at 880 ohms
Receiver level	Adjustable 150 mv rms to 16 rms across 880 ohms

TD-1065/G

Input data rates	16 or 32 kb/s
Frame length	1152 bits

TD-976/G

Data rate (12 channels)	576 kb/s
Timing rate	576 kHz

TD-1069/G

Input data rate	600, 1200, 2400, 4800 or 9600 b/s
Timing rate	32 kb/s ± 30 ppm

LOCAL COMMUNICATIONS FACILITIES:

Intercom	LS-147C/FI
Telephone	TA-312/PT

MECHANICAL CHARACTERISTICS:

Dimensions:	
Length	147 in. (less exhaust blowers)
Height	83 in.
Width	87 in.
Volume	614 cu ft
Gross weight:	
AN/TCC-73(V)1	4,555 lb
AN/TCC-73(V)2	5,300 lb
AN/TCC-73A(V)1	5,300 lb
AN/TCC-73A(V)2	4,749 lb
Load per skid	3.12 lbs per sq in.

Section III TECHNICAL PRINCIPLES OF OPERATION

Subject	Para	Page
General	1-14	1-15
Principles of Multiplexing (TDM)	1-15	1-16
Pulse Code Modulation	1-16	1-16
AN/TCC-73(*) Facility Block Diagram Presentation	1-17	1-16
Systems Block Diagram Presentation	1-18	1-29

1-14. GENERAL.

This section explains the operation of the radio and cable equipment of the AN/TCC-73(*). Multiplexing and pulse code modulation are explained in detail, and a block diagram presentation is used in order to simplify the technical principles of operation.

The AN/TCC-73(*) is a versatile communications system capable of repeater or terminal operation. These systems use radio or cable, or combinations of both, as a transmission medium. The pulse code modulation components provide 12, 24, 48 or 96 audio channels in a single transmission cable.

In 12- or 24-channel systems, 12 or 24 separate telephone signals are converted to tdm-pcm pulse trains. These pulse trains are reshaped and retimed at repeater points in the system, and reconverted to telephone signals at a distant terminal. In 48- or 96-channel telephone systems, the telephone channels are converted into tdm-pcm pulse trains. For radio transmission or cable transmission, the pulse trains are transmitted over a single radio channel or single cable.

The cable system provides the capability for intermediate terminals along the transmission path. One pulse train is repeated from the local terminal to the distant terminal. While the second pulse train terminates at the intermediate point, a new pulse train is inserted in its place. The intermediate point (drop and insert repeater) can therefore communicate in both directions, with both terminals. The drop and insert repeater points contain both repeater and terminal equipment.

1-15. PRINCIPLES OF MULTIPLEXING (TDM).

Multiplexing is a technique used to transmit several channels of voice or data over a radio or cable link at the same time. In tdm equipment, each voice or data channel shares the transmission time and is intermittently transmitted.

In time division multiplexing, each voice channel is assigned a time interval in sequence with all other channels being multiplexed. These intervals are short and repeated as a high frequency. The samples taken from each channel are then converted to a form suitable for transmission in the selected medium. At the receiving terminal, the samples are demodulated and separated into their proper channels by a timing signal from the transmitting terminal.

1-16. PULSE CODE MODULATION.

Pulse code modulation is a communication technique in which voice, data, or facsimile signals are converted into a series of digital pulse codes. Each pulse code represents signal amplitude at a particular instant and a series of pulse codes represent a complete waveform. Since the transmitted signal is in digital form, it is less affected by noise and distortion build-up over long distance lines, and repeaters along the route will not cause additional distortion.

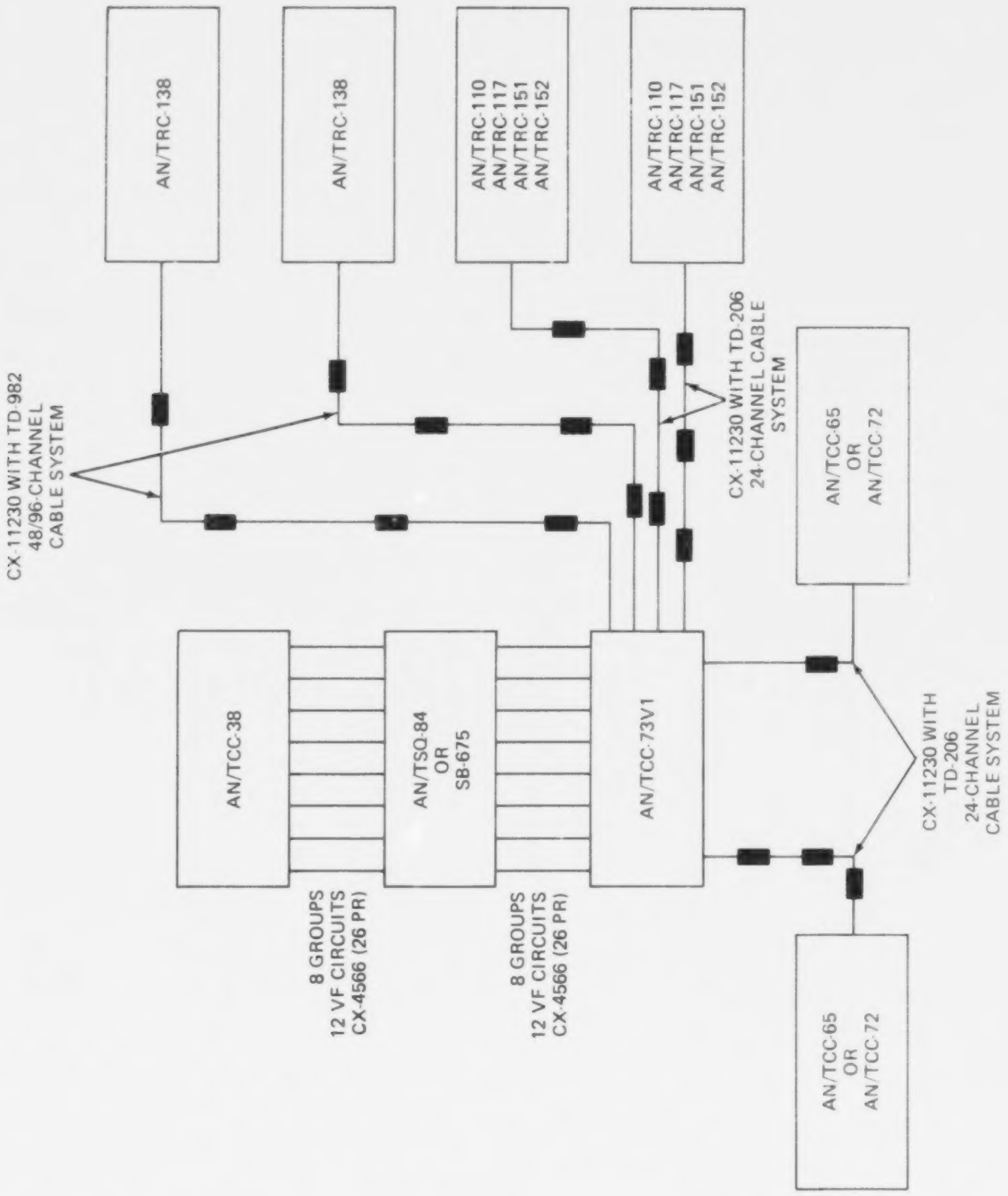
In the pcm process, standard amplitude levels are assigned digital codes. The incoming voice waveform is sampled at a high rate, and each sample is converted to a pulse at the closest standard amplitude, producing a pulse amplitude modulated (pcm) waveform. The standard amplitude pulses developed are then measured and converted to a binary pulse code for transmission. The pulse codes are decoded at the receiving station and reconverted to a pcm waveform, which is then demodulated to produce approximately the original waveform. As the sampling frequency is increased, the waveform generated at the receiver more closely resembles the original waveform.

1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION.

The following block diagrams show various facility applications for the AN/TCC-73(*). Component configurations to achieve a complete systems application follow each block diagram.

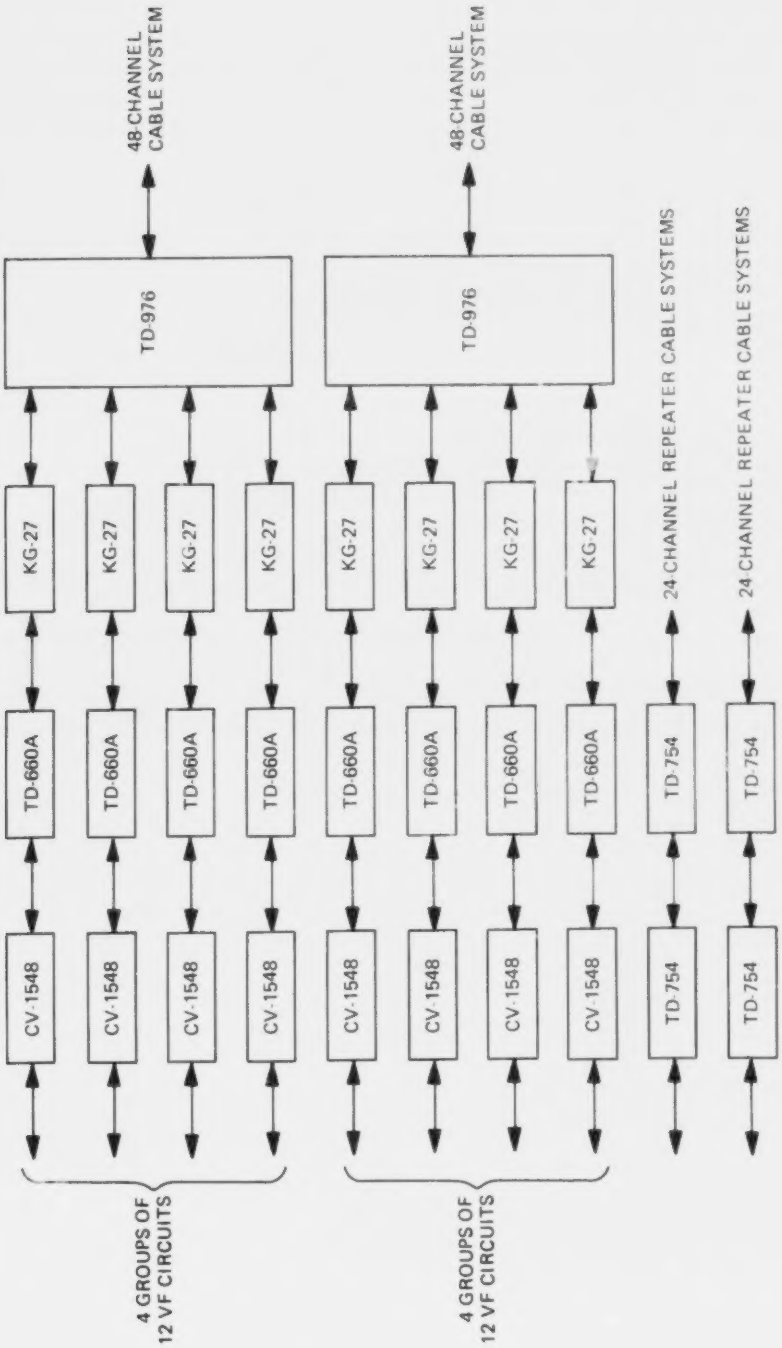
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)

EL3TR203


AN/TRC-138
AN/TRC-138
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
CX-11230 WITH TD-982
48/96-CHANNEL
CABLE SYSTEM
CX-11230 WITH TD-206
24-CHANNEL CABLE
SYSTEM
AN/TCC-65
OR
AN/TCC-72
AN/TCC-38
AN/TSQ-84
OR
SB-675
AN/TCC-73V1
CX-11230 WITH
TD-206
24-CHANNEL
CABLE SYSTEM
8 GROUPS
12 VF CIRCUITS
CX-4566 (26 PR)
8 GROUPS
12 VF CIRCUITS
CX-4566 (26 PR)
AN/TCC-65
OR
AN/TCC-72

AN/TCC-73(V)1 FACILITY APPLICATION

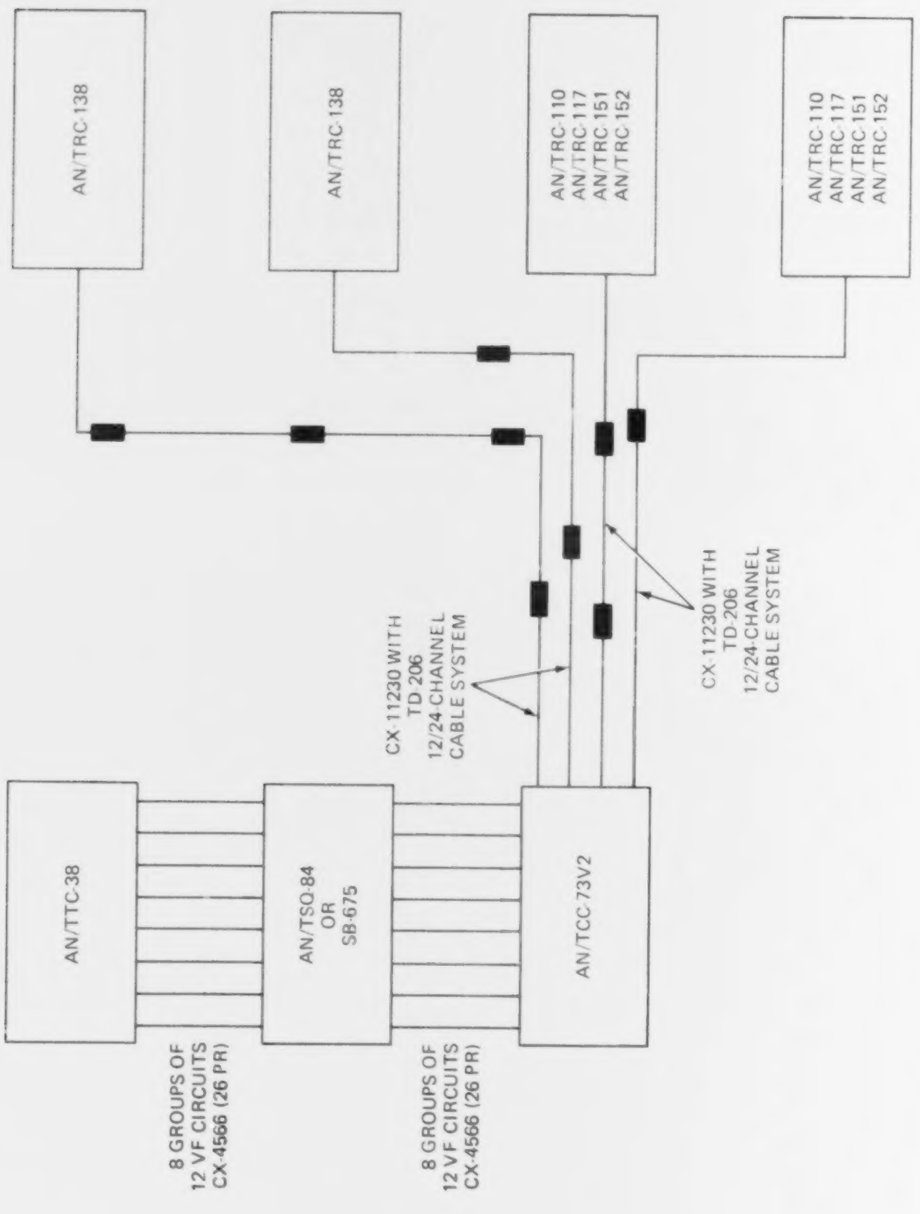
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


48-CHANNEL CABLE SYSTEM
TD-976
KG-27
KG-27
KG-27
KG-27
TD-660A
TD-660A
TD-660A
TD-660A
CV-1548
CV-1548
CV-1548
CV-1548
4 GROUPS OF 12 VF CIRCUITS
48-CHANNEL CABLE SYSTEM
TD-976
KG-27
KG-27
KG-27
KG-27
TD-660A
TD-660A
TD-660A
TD-660A
CV-1548
CV-1548
CV-1548
CV-1548
4 GROUPS OF 12 VF CIRCUITS
24-CHANNEL REPEATER CABLE SYSTEMS
TD-754
TD-754
24-CHANNEL REPEATER CABLE SYSTEMS
TD-754
TD-754

AN/TCC-73(V)1 FACILITY APPLICATION

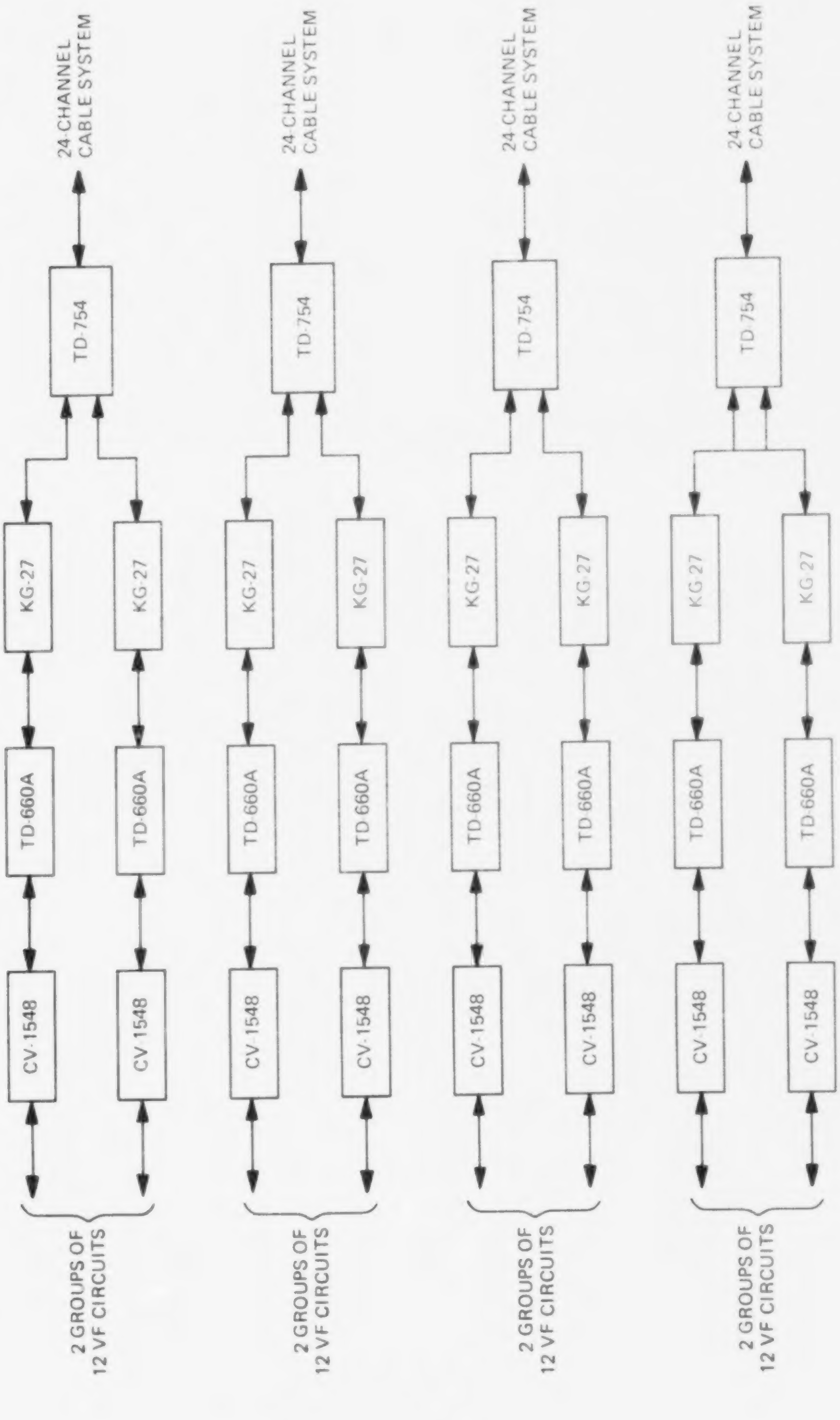
EL3TR204

1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


EL3TR205
AN/TRC-138
AN/TRC-138
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
CX-11230 WITH
TD-206
12/24-CHANNEL
CABLE SYSTEM
CX-11230 WITH
TD-206
12/24-CHANNEL
CABLE SYSTEM
AN/TTC-38
AN/TSQ-84
OR
SB-675
AN/TCC-73V2
8 GROUPS OF
12 VF CIRCUITS
CX-4566 (26 PR)
8 GROUPS OF
12 VF CIRCUITS
CX-4566 (26 PR)

AN/TCC-73(V)2 FACILITY APPLICATION

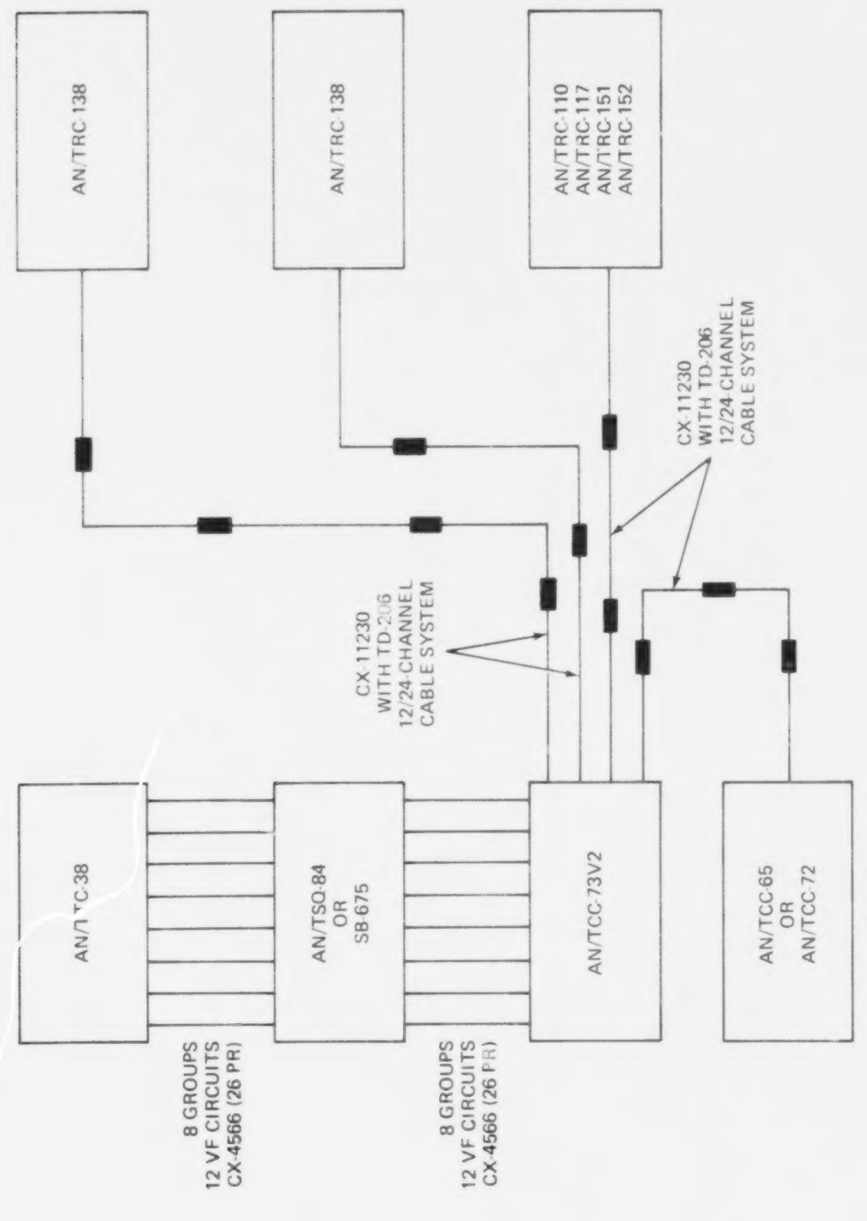
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


24-CHANNEL CABLE SYSTEM
TD-754
KG-27
KG-27
TD-660A
TD-660A
CV-1548
CV-1548
2 GROUPS OF 12 VF CIRCUITS
24-CHANNEL CABLE SYSTEM
TD-754
KG-27
KG-27
TD-660A
TD-660A
CV-1548
CV-1548
2 GROUPS OF 12 VF CIRCUITS
24-CHANNEL CABLE SYSTEM
TD-754
KG-27
KG-27
TD-660A
TD-660A
CV-1548
CV-1548
2 GROUPS OF 12 VF CIRCUITS
24-CHANNEL CABLE SYSTEM
TD-754
KG-27
KG-27
TD-660A
TD-660A
CV-1548
CV-1548
2 GROUPS OF 12 VF CIRCUITS
EL3TR206

AN/TCC 73(V)2 FACILITY APPLICATION

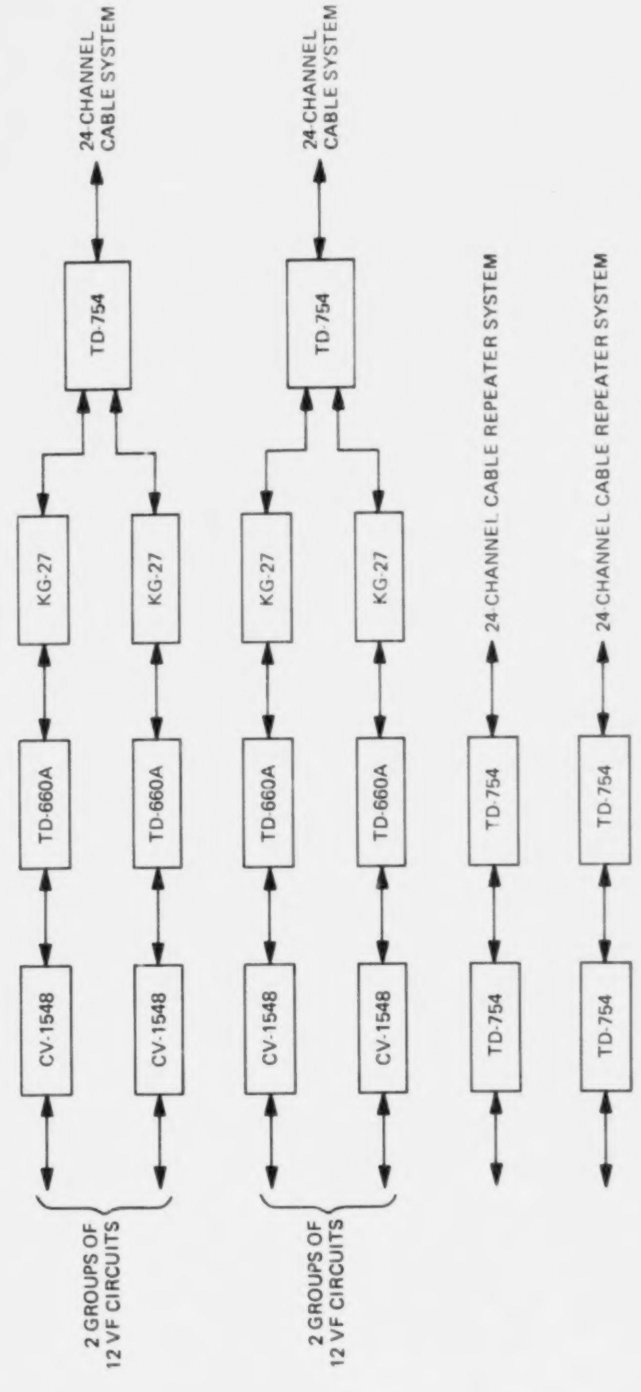
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)

EL3TR207


AN/TRC-138
AN/TRC-138
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
CX-11230
WITH TD-206
12/24-CHANNEL
CABLE SYSTEM
CX-11230
WITH TD-206
12/24-CHANNEL
CABLE SYSTEM
AN/TCC-38
AN/TSQ-84
OR
SB-675
AN/TCC-73V2
AN/TCC-65
OR
AN/TCC-72
8 GROUPS
12 VF CIRCUITS
CX-4566 (26 PR)
8 GROUPS
12 VF CIRCUITS
CX-4566 (26 PR)

AN/TCC-73(V)2 FACILITY APPLICATION

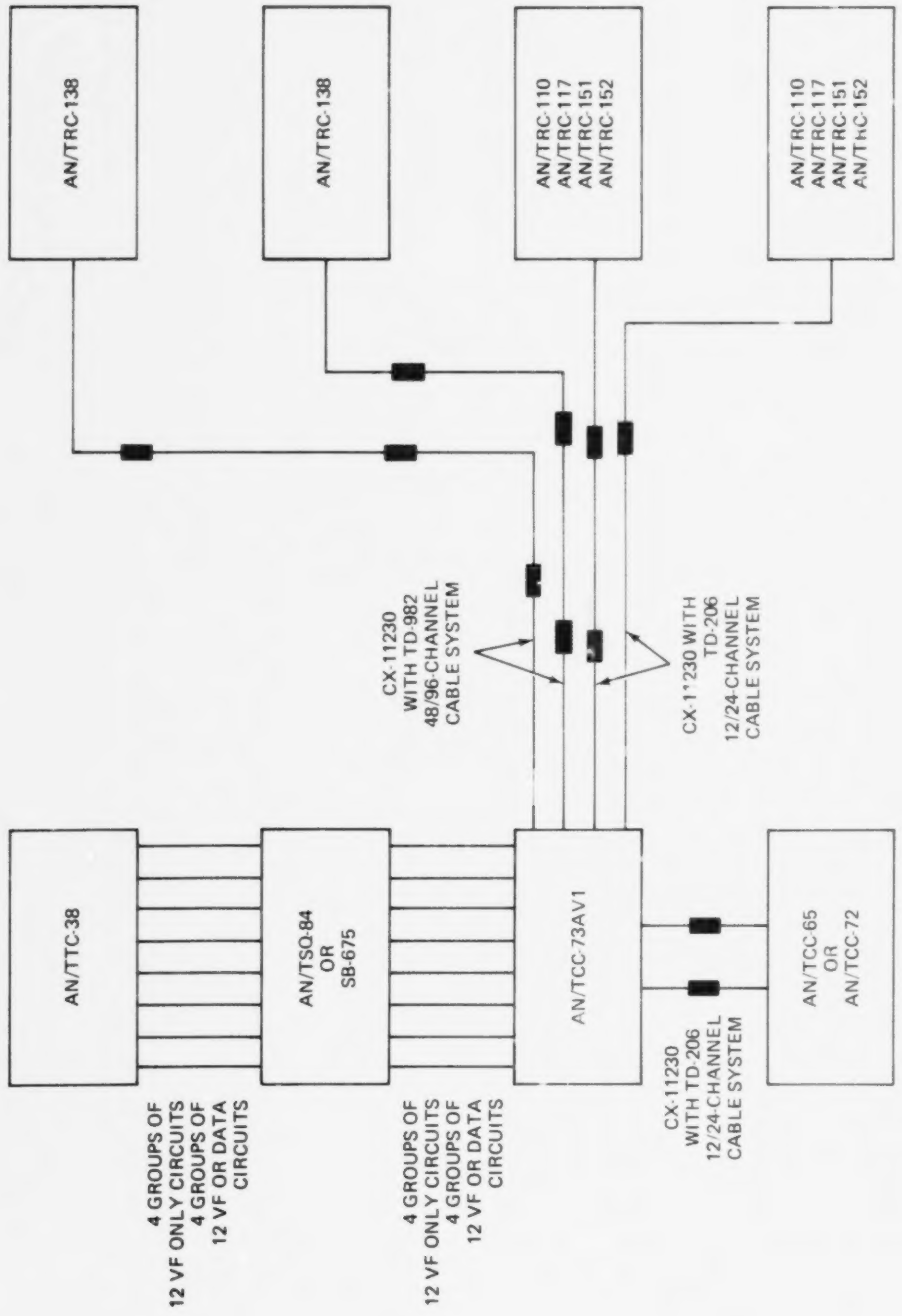
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


24-CHANNEL
CABLE SYSTEM
TD-754
KG-27
KG-27
TD-660A
TD-660A
CV-1548
CV-1548
2 GROUPS OF
12 VF CIRCUITS
24-CHANNEL
CABLE SYSTEM
TD-754
KG-27
KG-27
TD-660A
TD-660A
CV-1548
CV-1548
2 GROUPS OF
12 VF CIRCUITS
24-CHANNEL CABLE REPEATER SYSTEM
TD-754
TD-754
24-CHANNEL CABLE REPEATER SYSTEM
TD-754
TD-754

AN/TCC-73(V)2 FACILITY APPLICATION

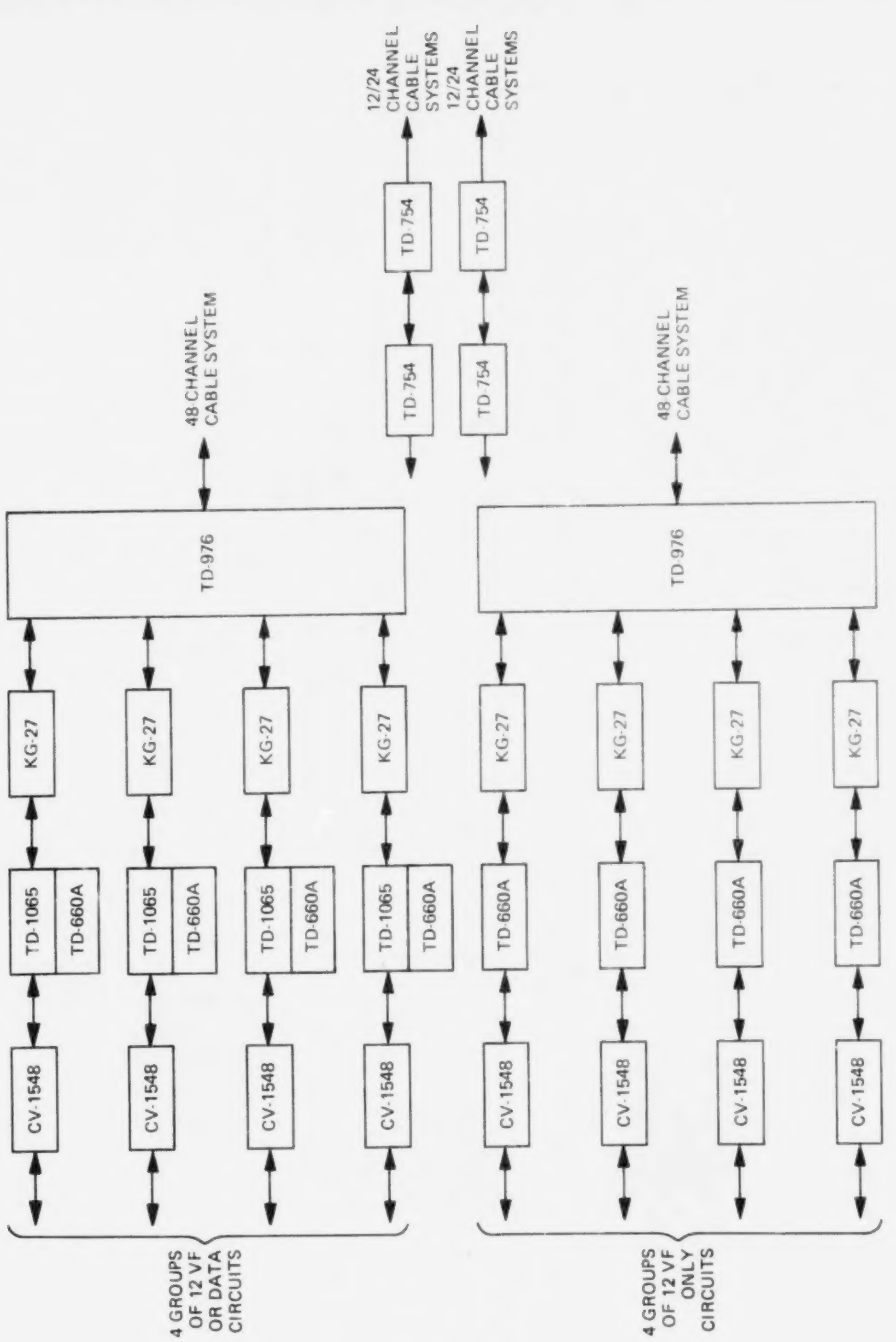
EL3TR208

1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


EL3TR209
AN/TRC-138
AN/TRC-138
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
CX-11230
WITH TD-982
48/96-CHANNEL
CABLE SYSTEM
CX-11230 WITH
TD-206
12/24-CHANNEL
CABLE SYSTEM
AN/TTC-38
AN/TSQ-84
OR
SB-675
AN/TCC-73AV1
AN/TCC-65
OR
AN/TCC-72
4 GROUPS OF
12 VF ONLY CIRCUITS
4 GROUPS OF
12 VF OR DATA
CIRCUITS
4 GROUPS OF
12 VF ONLY CIRCUITS
4 GROUPS OF
12 VF OR DATA
CIRCUITS
CX-11230
WITH TD-206
12/24-CHANNEL
CABLE SYSTEM

AN/TCC-73A(V)1 FACILITY APPLICATION

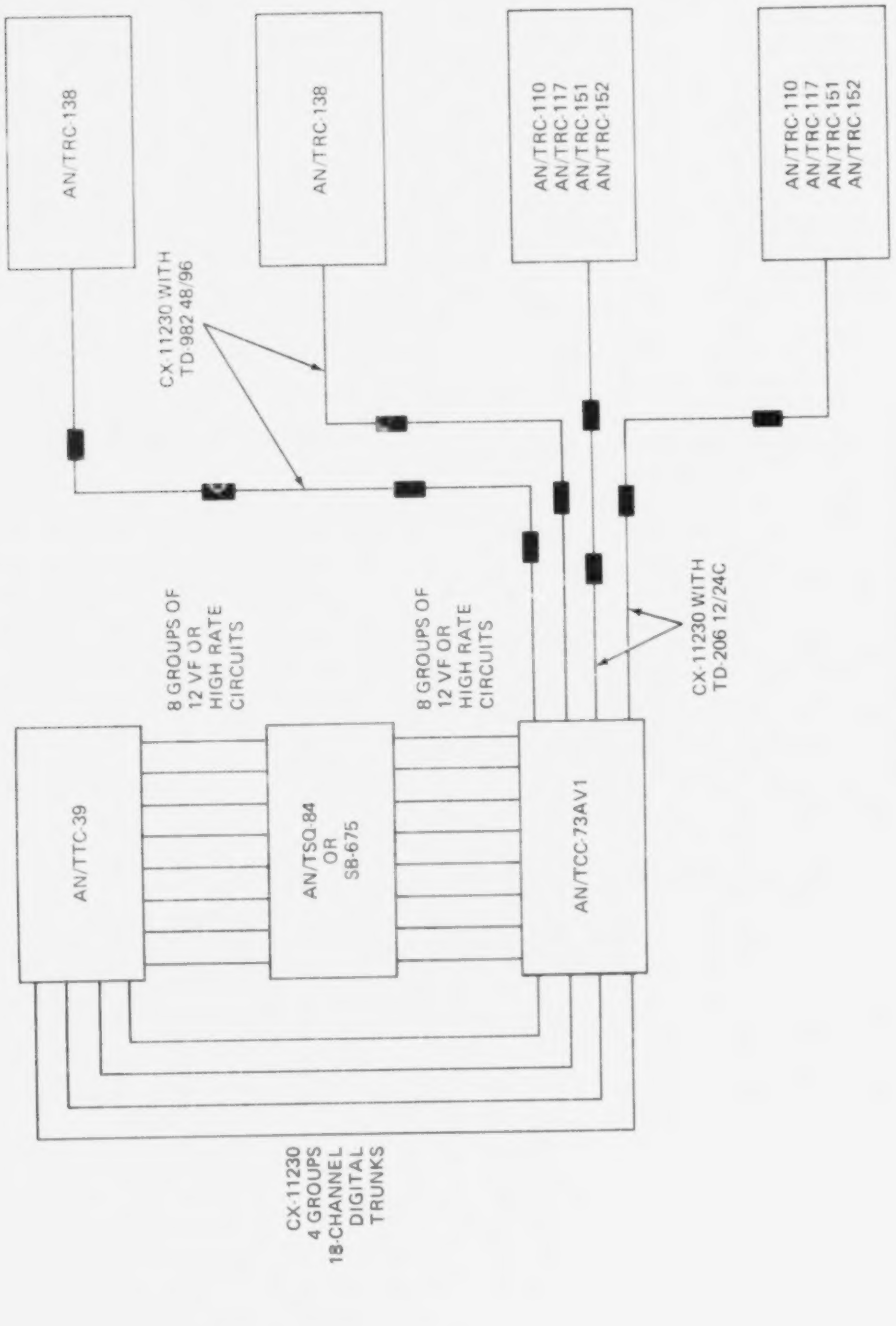
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


12/24 CHANNEL CABLE SYSTEMS
12/24 CHANNEL CABLE SYSTEMS
TD-754
TD-754
TD-754
TD-754
48 CHANNEL CABLE SYSTEM
48 CHANNEL CABLE SYSTEM
TD-976
TD-976
KG-27
KG-27
KG-27
KG-27
KG-27
KG-27
KG-27
KG-27
TD-1065
TD-660A
TD-1065
TD-660A
TD-1065
TD-660A
TD-1065
TD-660A
TD-660A
TD-660A
TD-660A
TD-660A
CV-1548
CV-1548
CV-1548
CV-1548
CV-1548
CV-1548
CV-1548
CV-1548
4 GROUPS OF 12 VF OR DATA CIRCUITS
4 GROUPS OF 12 VF ONLY CIRCUITS

EL3TR210

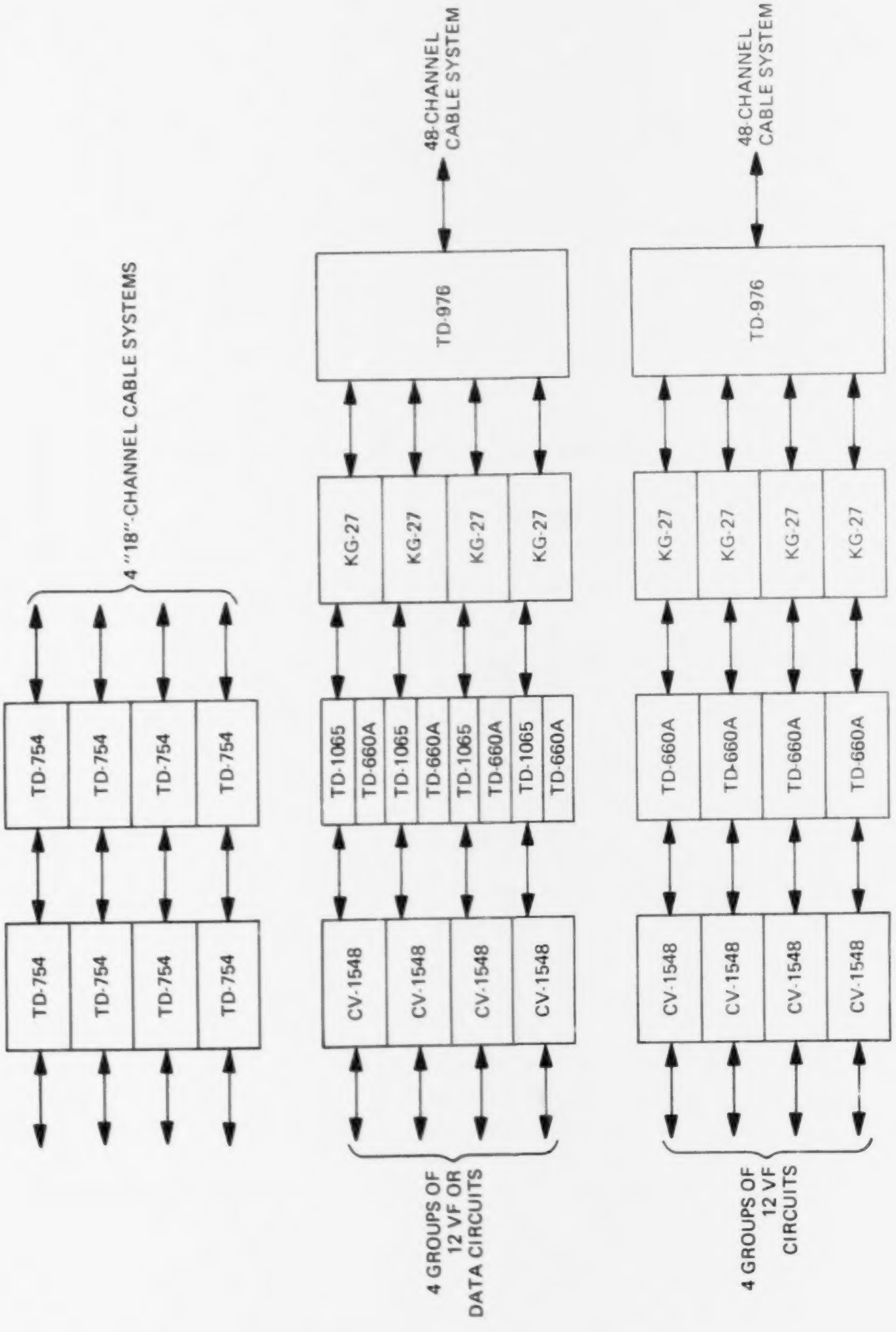
AN/TCC-73A(V)1 FACILITY APPLICATION

1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


EL3TR211
AN/TRC-138
AN/TRC-138
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
CX-11230 WITH
TD-982 48/96
8 GROUPS OF
12 VF OR
HIGH RATE
CIRCUITS
8 GROUPS OF
12 VF OR
HIGH RATE
CIRCUITS
CX-11230 WITH
TD-206 12/24C
AN/TTC-39
AN/TSQ-84
OR
SB-675
AN/TCC-73AV1
CX-11230
4 GROUPS
18-CHANNEL
DIGITAL
TRUNKS

AN/TCC-73A(V)1 FACILITY APPLICATION

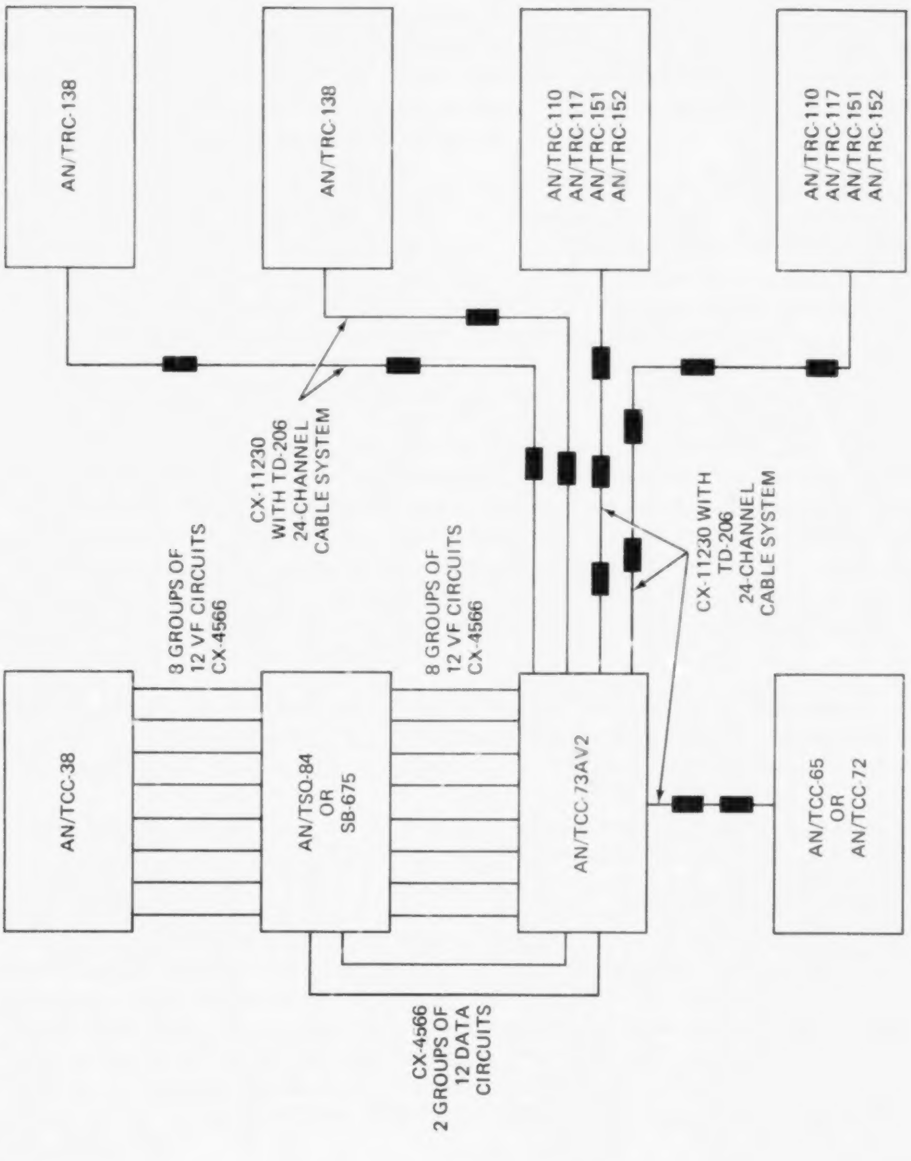
1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


4 "18"-CHANNEL CABLE SYSTEMS
TD-754
TD-754
TD-754
TD-754
TD-754
TD-754
TD-754
TD-754
48-CHANNEL CABLE SYSTEM
TD-976
KG-27
KG-27
KG-27
KG-27
TD-1065
TD-660A
TD-1065
TD-660A
TD-1065
TD-660A
TD-1065
TD-660A
CV-1548
CV-1548
CV-1548
CV-1548
4 GROUPS OF 12 VF OR DATA CIRCUITS
48-CHANNEL CABLE SYSTEM
TD-976
KG-27
KG-27
KG-27
KG-27
TD-660A
TD-660A
TD-660A
TD-660A
CV-1548
CV-1548
CV-1548
CV-1548
4 GROUPS OF 12 VF CIRCUITS

AN/TCC-73A(V)1 FACILITY APPLICATION

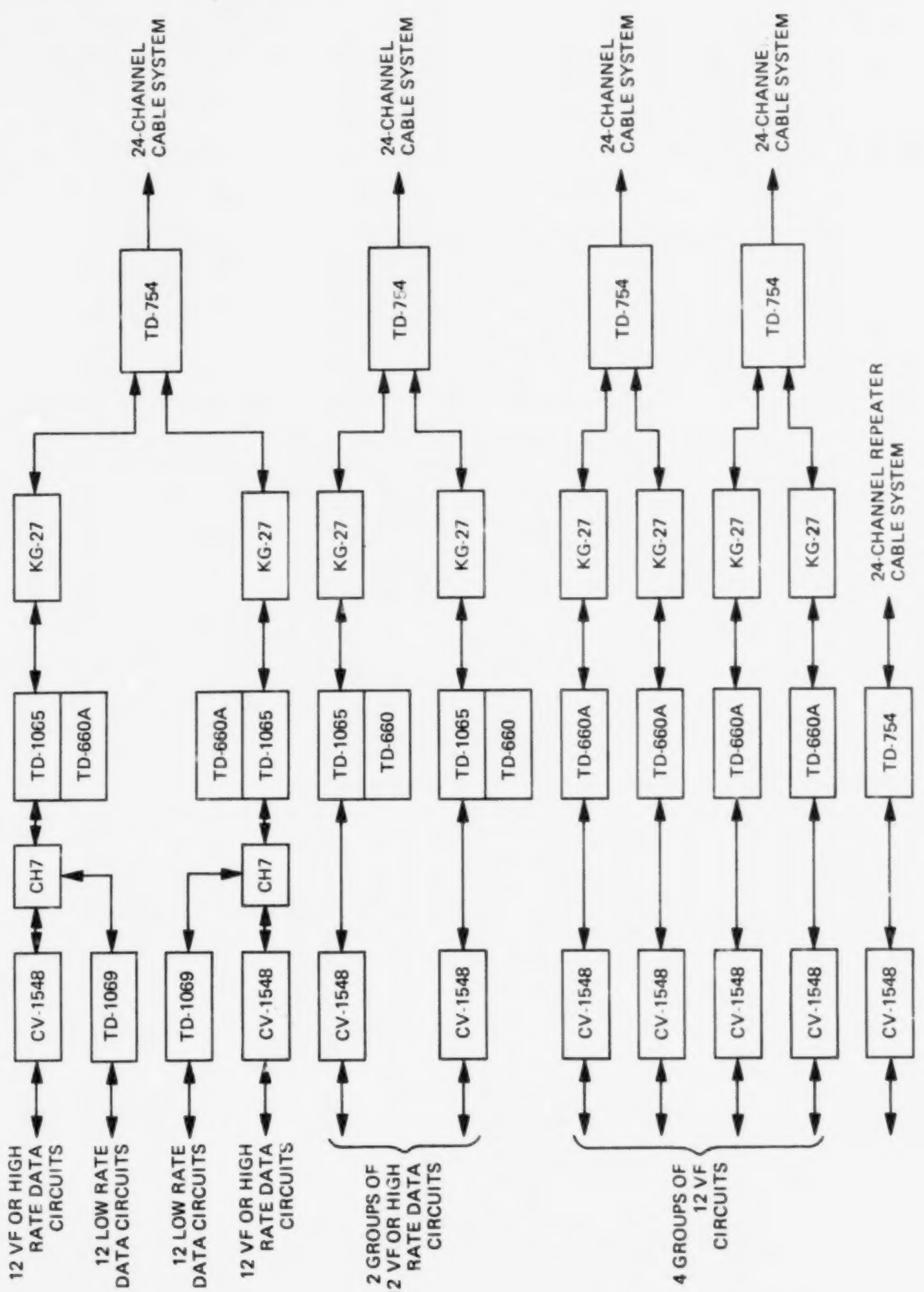
EL3TR212

1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


AN/TRC-138
AN/TRC-138
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
AN/TRC-110
AN/TRC-117
AN/TRC-151
AN/TRC-152
CX-11230
WITH TD-206
24-CHANNEL
CABLE SYSTEM
3 GROUPS OF
12 VF CIRCUITS
CX-4566
8 GROUPS OF
12 VF CIRCUITS
CX-4566
CX-11230 WITH
TD-206
24-CHANNEL
CABLE SYSTEM
AN/TCC-38
AN/TSQ-84
OR
SB-675
AN/TCC-73AV2
AN/TCC-65
OR
AN/TCC-72
CX-4566
2 GROUPS OF
12 DATA
CIRCUITS
EL3TR213

AN/TCC-73A(V)2 FACILITY APPLICATION

1-17. AN/TCC-73(*) FACILITY BLOCK DIAGRAM PRESENTATION. (CONT)


12 VF OR HIGH RATE DATA CIRCUITS
CV-1548
CH7
TD-1065
TD-660A
KG-27
TD-754
24-CHANNEL CABLE SYSTEM
12 LOW RATE DATA CIRCUITS
TD-1069
12 LOW RATE DATA CIRCUITS
TD-1069
12 VF OR HIGH RATE DATA CIRCUITS
CV-1548
CH7
TD-1065
TD-660A
KG-27
2 GROUPS OF 12 VF OR HIGH RATE DATA CIRCUITS
CV-1548
TD-1065
TD-660
KG-27
CV-1548
TD-1065
TD-660
KG-27
TD-754
24-CHANNEL CABLE SYSTEM
4 GROUPS OF 12 VF CIRCUITS
CV-1548
TD-660A
KG-27
CV-1548
TD-660A
KG-27
TD-754
24-CHANNEL CABLE SYSTEM
CV-1548
TD-660A
KG-27
CV-1548
TD-660A
KG-27
TD-754
24-CHANNE CABLE SYSTEM
CV-1548
TD-754
24-CHANNEL REPEATER CABLE SYSTEM
EL3TR214

AN/TCC-73A(V)2 FACILITY APPLICATION

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION.

The functional equipment descriptions block diagrams and patch panel arrangements which follow show how the AN/TCC-73(*) communications equipment is interconnected for each kind of operation. Descriptions of all components appear before the block diagrams. Equipment will vary depending upon facility configuration and type of operation being shown. The patch panel cable patching arrangement will follow the associated block diagram(s). Like components can be substituted in the event of a failure by using the appropriate patch panel connections.

FUNCTIONAL EQUIPMENT DESCRIPTION

1 TELEPHONE SIGNAL CONVERTER CV-1548(*)/G. Provides telephone ring signal conversion for two-wire (20 Hz) to four-wire (1,600 Hz). The converted ring signal can now be accepted by the TD-660(*)/G. Each channel provides either one-way plug supervision with ring down signal conversion between two-wire and four-wire circuits, or four-wire straight-through circuits (switch selectable).

2 MULTIPLEXER TD-660(*)/G. Multiplexer TD-660(*)/G converts 6 or 12 four-wire voice frequency (vf) channels to a time division multiplex/pulse code modulated (tdm-pcm) signal in its transit section, and vice versa in its receive section. The TD-660(*)/G is used in nonsecure communications, and the TD-660A/G and TD-660B/G are used in secure communications systems. TD-660AM or TD-660AS indicates that a TD-660A/G is being used with the MASTER/SLAVE switch set to either master (M) or slave (S).

3 MULTIPLEXER TD-754/G. Multiplexer TD-754/G provides the capability for transmission of pulse code modulation (pcm) pulses through cable transmission systems. Pcm pulses from multiplexer TD-660(*)/G are applied to the TD-754/G. In the TD-754/G the pcm pulses are encoded into another pcm format and transmitted at a 2304 kb/s rate through a cable link to another TD-754/G. The TD-754/G at the opposite end of the cable link decodes the pcm pulses into their original pcm format and applies them to a TD-660(*)/G. The TD-754/G also provides cable current to power pulse form restorers TD-206/G installed in the cable link. Order wire facilities that operate over the cable link are also contained in the TD-754/G to provide a phone link between terminals. The TD-754/G is interchangeable with the TD-204/U.

4 DATA BUFFER TD-1065/G. When the TD-1065/G is used with TD-660A/G or TD-660B/G, it provides for access of data (16/32 kb/s) to any channel of the 6- or 12-channel signal developed by the TD-660A/G and TD-660B/G.

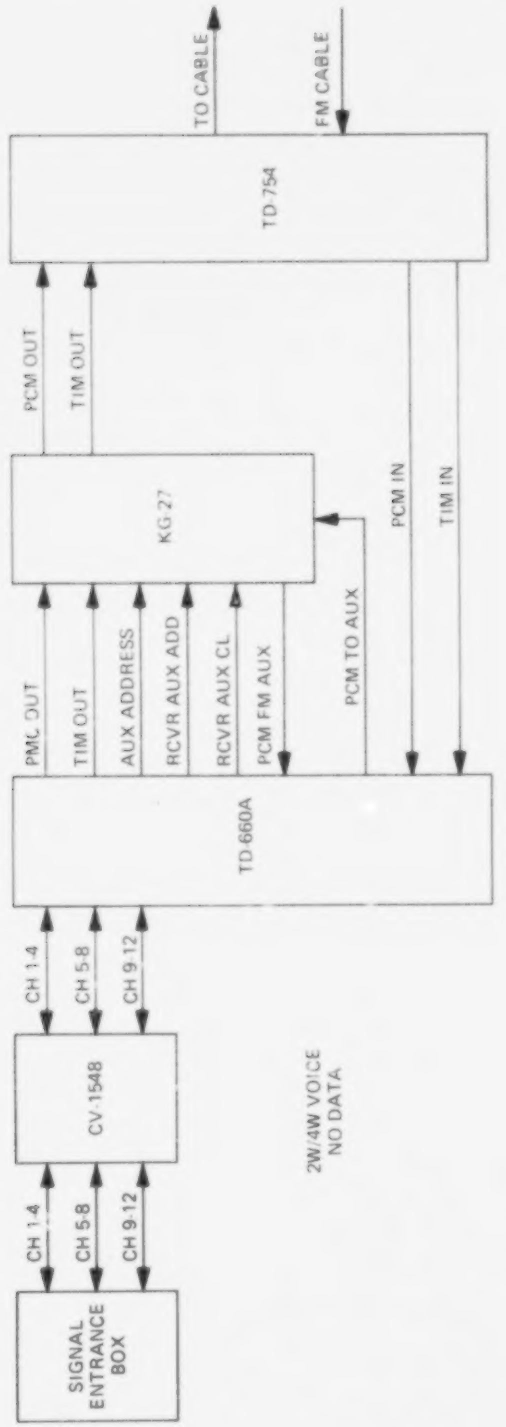
5 MULTIPLEXER TD-976/G. The TD-976/G is capable of multiplexing and demultiplexing on a time division basis of up to eight inputs from a combination of TD-660(*)/G, TD-754/G multiplexers, other TD-976/Gs or compatible data sources. The TD-976/G combines one to eight systems together and sends the signal on a single transmission cable to another TD-976/G, where the signal is demultiplexed and sent to up to eight systems. Order wire facilities that operate over the cable link are also contained in the TD-976/G to provide a phone link between terminals. The TD-976/G will drive up to a half mile of CX-11230/G cable. With pulse form restorers (TD-982/Gs) at half mile intervals, the TD-976s can drive up to five miles of cable. The TD-976/G provides an analogue cable order wire capability for operator communications with radio operators. The TD-976/G also provides a digital system order wire capability for communications between TD-976/G operators only.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)

FUNCTIONAL EQUIPMENT DESCRIPTION (CONT)

6 MULTIPLEXER TD-1069/G. The TD-1069/G is a time division digital multiplexer which can multiplex and demultiplex up to 12 low speed digital data subscribers. Any six of the 12 channels may be used for data; the remaining six channels may be used for frequency shift keying teletype signals. The TD-1069/G can interface with Data Buffer TD-1065/G and Teletypewriter Equipment AN/VGC-74(V)3. The TD-1069 multiplexes up to 12 subscriber signals into a single data stream at 32 kb/s. The multiplexed signal is sent to Data Buffer TD-1065/G for access to multichannel transmission to a distant site. The signal is received by a distant TD-1069/G which demultiplexes the signal and can send the information to up to 12 individual subscribers.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)

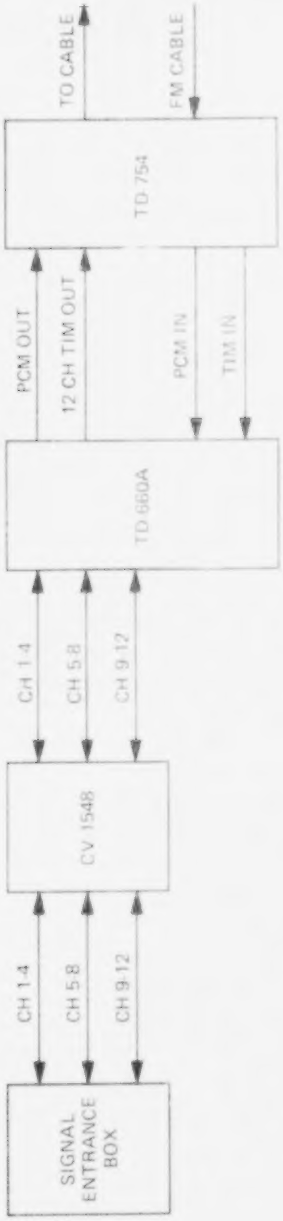

TO CABLE
FM CABLE
TD-754
PCM OUT
TIM OUT
KG-27
PCM IN
TIM IN
PCM OUT
TIM OUT
AUX ADDRESS
RCVR AUX ADD
RCVR AUX CL
PCM FM AUX
PCM TO AUX
TD-660A
CH 1-4
CH 5-8
CH 9-12
CV-1548
2W/4W VOICE
NO DATA
CH 1-4
CH 5-8
CH 9-12
SIGNAL
ENTRANCE
BOX

EL3TR164

SECURE 12-CHANNEL TERMINAL (SYSTEMS 1-4 OPTIONS)
AN/TCC-73(V)1 OR (V)2.

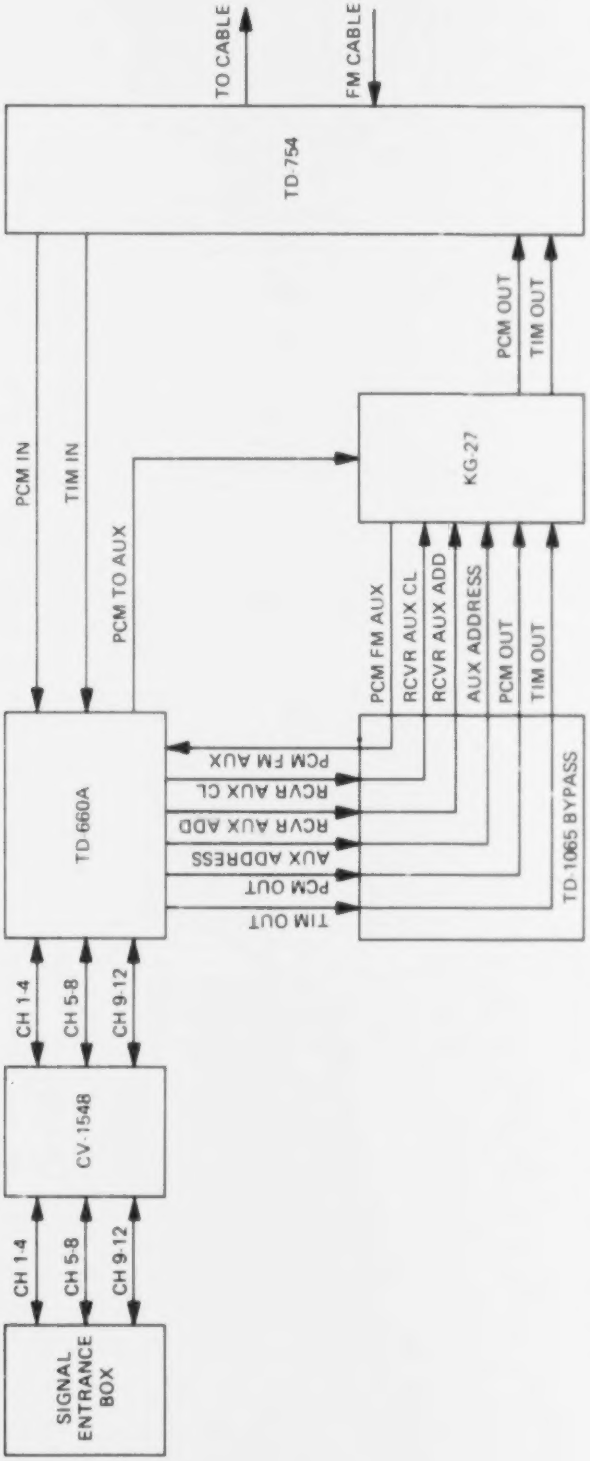
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)

EL3TR179


SIGNAL ENTRANCE BOX
CH 1-4
CH 5-8
CH 9-12
CV 1548
CH 1-4
CH 5-8
CH 9-12
TD 660A
PCM OUT
12 CH TIM OUT
PCM IN
TIM IN
TD 754
TO CABLE
FM CABLE

NONSECURE 12 CHANNEL TERMINAL AN/TCC-73(V)1 OR (V)2.

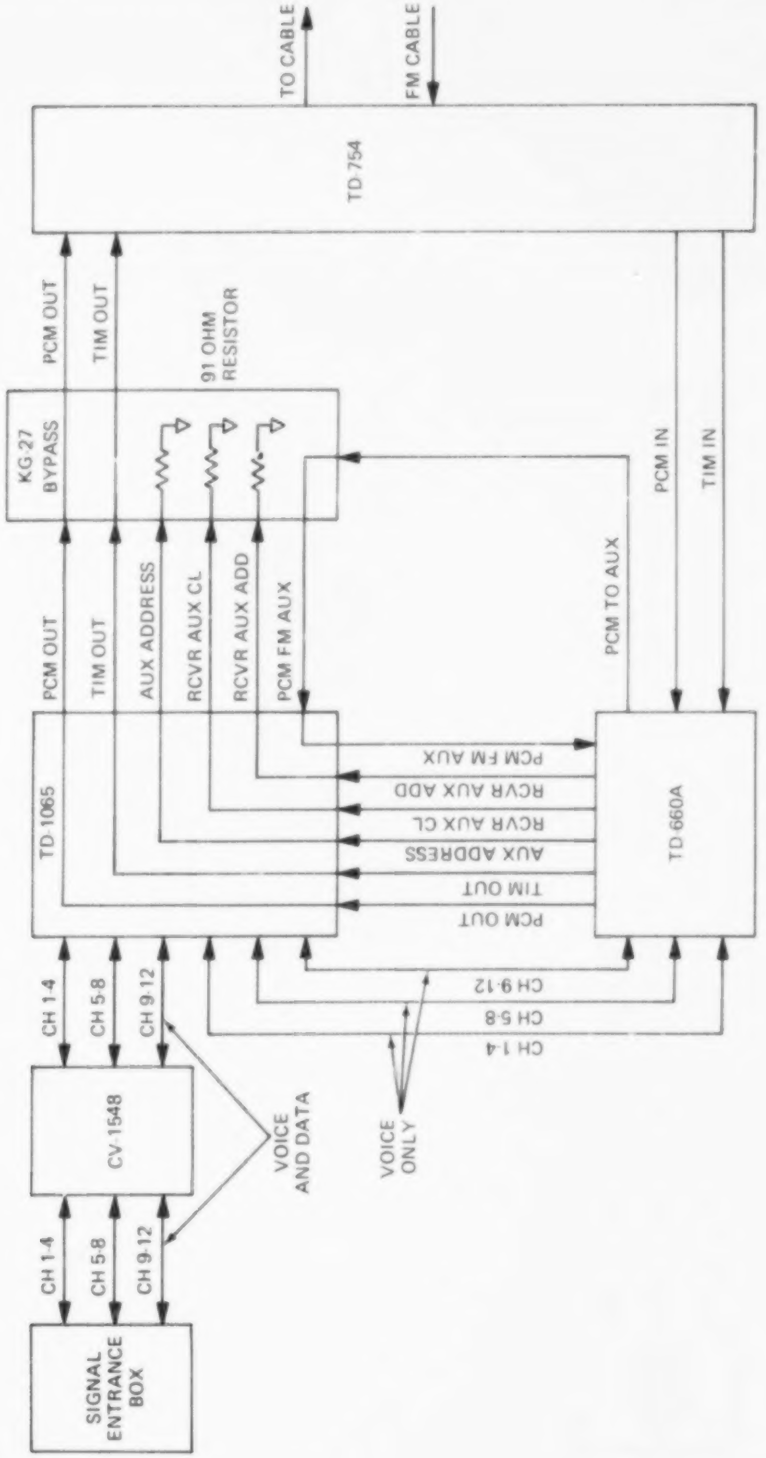
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-754
PCM IN
TIM IN
PCM TO AUX
PCM OUT
TIM OUT
KG-27
PCM FM AUX
RCVR AUX CL
RCVR AUX ADD
AUX ADDRESS
PCM OUT
TIM OUT
TD-660A
PCM FM AUX
RCVR AUX CL
RCVR AUX ADD
AUX ADDRESS
PCM OUT
TIM OUT
TD-1065 BYPASS
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL
ENTRANCE
BOX

EL3TR180

SECURE 12-CHANNEL TERMINAL WITH TD-1065/G BYPASSED AN/TCC-73(*)

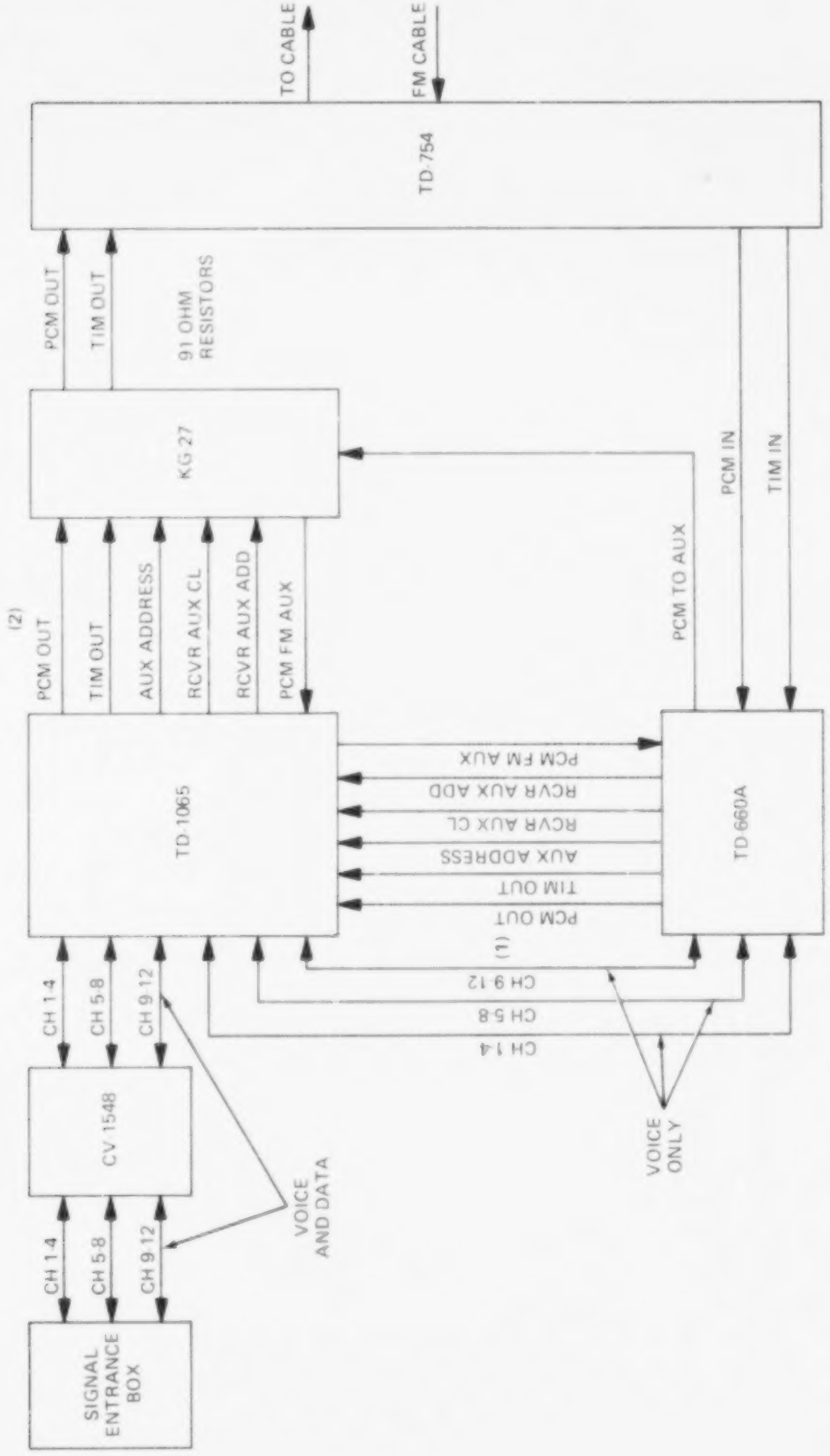
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-754
PCM OUT
TIM OUT
91 OHM RESISTOR
KG-27 BYPASS
PCM IN
TIM IN
PCM OUT
TIM OUT
AUX ADDRESS
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
TD-1065
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADDRESS
TIM OUT
PCM OUT
TD-660A
CH 1-4
CH 5-8
CH 9-12
CH 9-12
CH 5-8
CH 1-4
CV-1548
VOICE AND DATA
VOICE ONLY
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX

EL3TR008

NONSECURE 12-CHANNEL CABLE TERMINAL WITH TD-1065/G AND KG-27 BYPASSED (SYSTEMS 1-4 OPTIONS) AN/TCC-73A(V)1 OR (V)2.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)

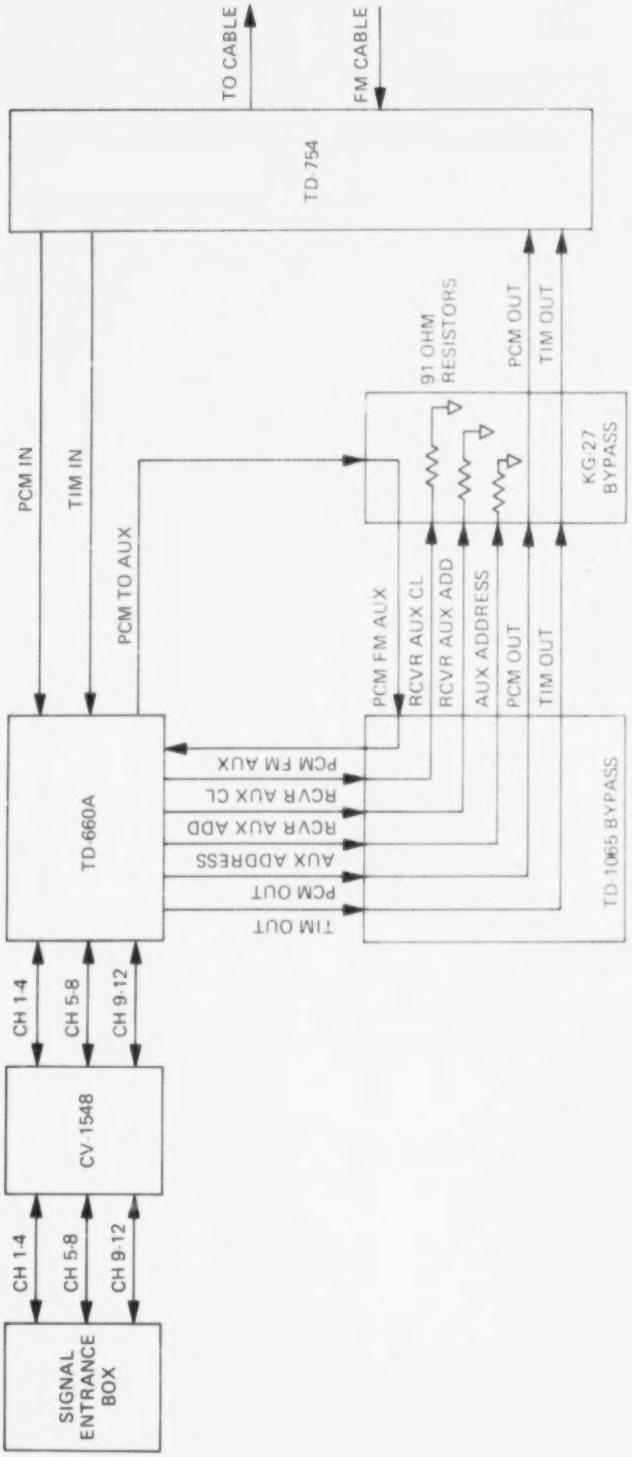

TO CABLE
FM CABLE
TD-754
PCM OUT
TIM OUT
91 OHM RESISTORS
KG-27
PCM IN
TIM IN
(2)
PCM OUT
TIM OUT
AUX ADDRESS
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
TD-1065
TD-660A
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADDRESS
TIM OUT
PCM OUT
(1)
CH 9-12
CH 5-8
CH 1-4
CH 1-4
CH 5-8
CH 9-12
CV 1548
VOICE ONLY
CH 1-4
CH 5-8
CH 9-12
VOICE AND DATA
SIGNAL ENTRANCE BOX

EL3TR181

NOTE:
(1) 12 CHANNELS DIGITIZED VOICE
(2) 12 CHANNELS DIGITIZED VOICE AND DIGITAL DATA

SECURE 12-CHANNEL CABLE TERMINAL WITH TD-1065/G (SYSTEMS 1-4 OPTIONS) AN/TCC-73A(V)1 OR (V)2

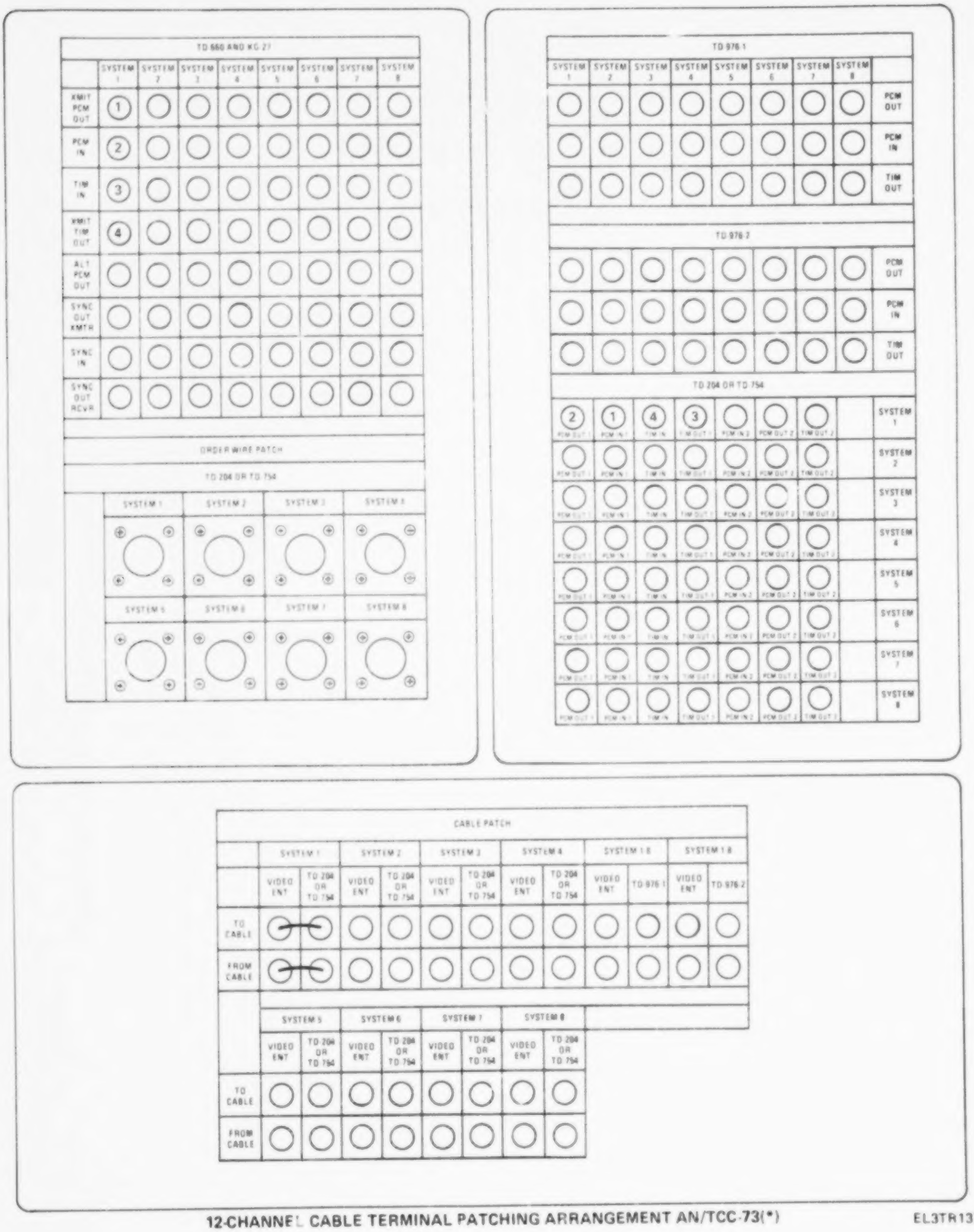
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-754
PCM IN
TIM IN
PCM TO AUX
91 OHM RESISTORS
PCM OUT
TIM OUT
KG-27 BYPASS
PCM FM AUX
RCVR AUX CL
RCVR AUX ADD
AUX ADDRESS
PCM OUT
TIM OUT
TD-660A
PCM FM AUX
RCVR AUX CL
RCVR AUX ADD
AUX ADDRESS
PCM OUT
TIM OUT
TD-1065 BYPASS
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX

NONSECURE 12-CHANNEL TERMINAL WITH TD-1065/G AND KG-27 BYPASSED AN/TCC-73 A(V)1 OR (V)2

EL3TR182

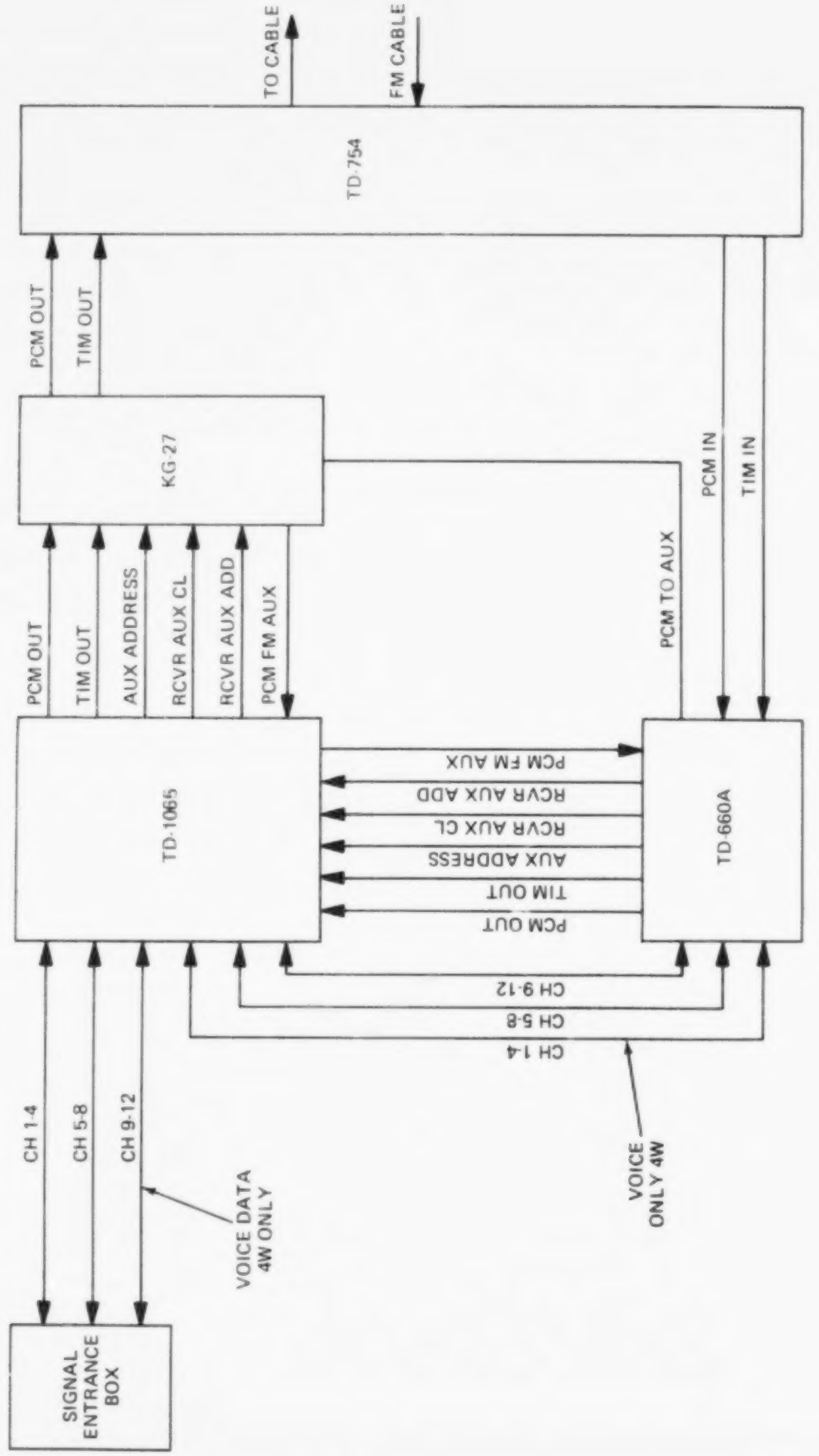
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG-27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976 1
PCM OUT
PCM IN
TIM OUT
TD 976 2
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
TO CABLE
FROM CABLE

12-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(*)

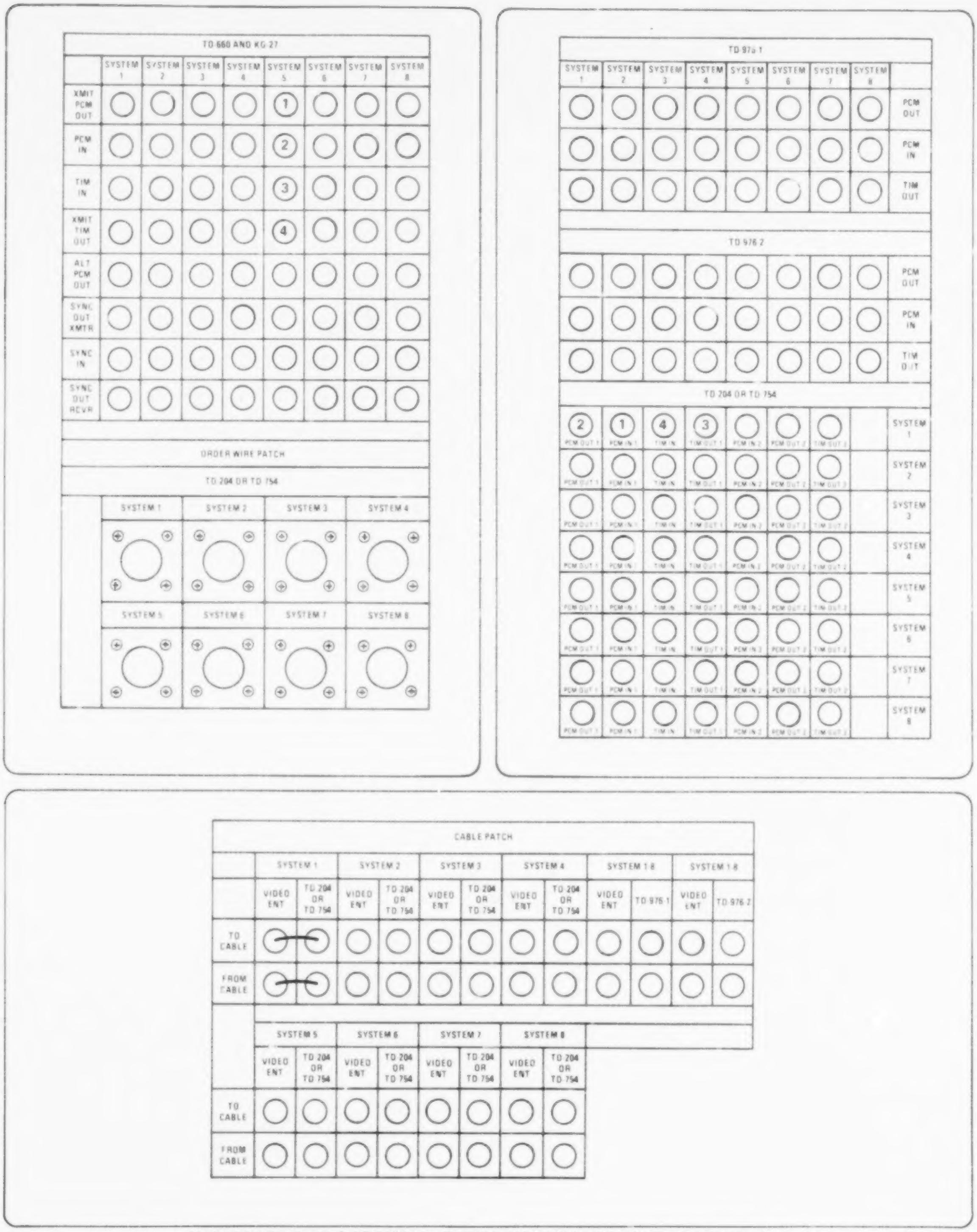
EL3TR137

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-754
PCM OUT
TIM OUT
KG-27
PCM OUT
TIM OUT
AUX ADDRESS
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
PCM IN
TIM IN
TD-1065
TD-660A
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADDRESS
TIM OUT
PCM OUT
CH 9-12
CH 5-8
CH 1-4
CH 1-4
CH 5-8
CH 9-12
VOICE DATA
4W ONLY
VOICE
ONLY 4W
SIGNAL
ENTRANCE
BOX
EL3TR183

SECURE 12-CHANNEL CABLE TERMINAL (SYSTEM 5-8 OPTIONS) AN/TCC-73 A(V)1

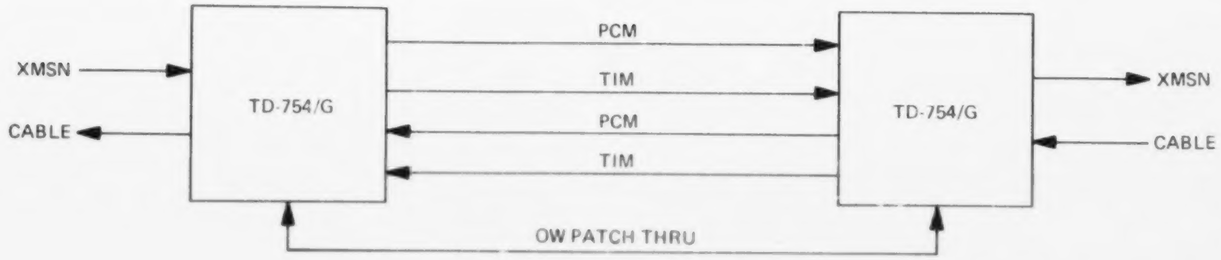
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG-27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976-1
PCM OUT
PCM IN
TIM OUT
TD 976-2
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976-1
TD 976-2
TO CABLE
FROM CABLE

12-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(*)

EL3TR184

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


XMSN
CABLE
TD-754/G
PCM
TIM
PCM
TIM
TD-754/G
XMSN
CABLE
OW PATCH THRU

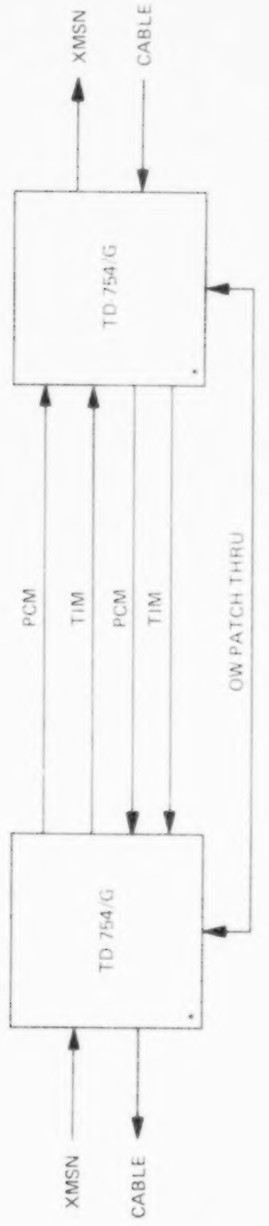
*TRAFFIC SELECTOR SWITCH AT 48AR

NONSECURE 12-CHANNEL CABLE REPEATER AN/TCC-73(*).

EL3TR185

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)

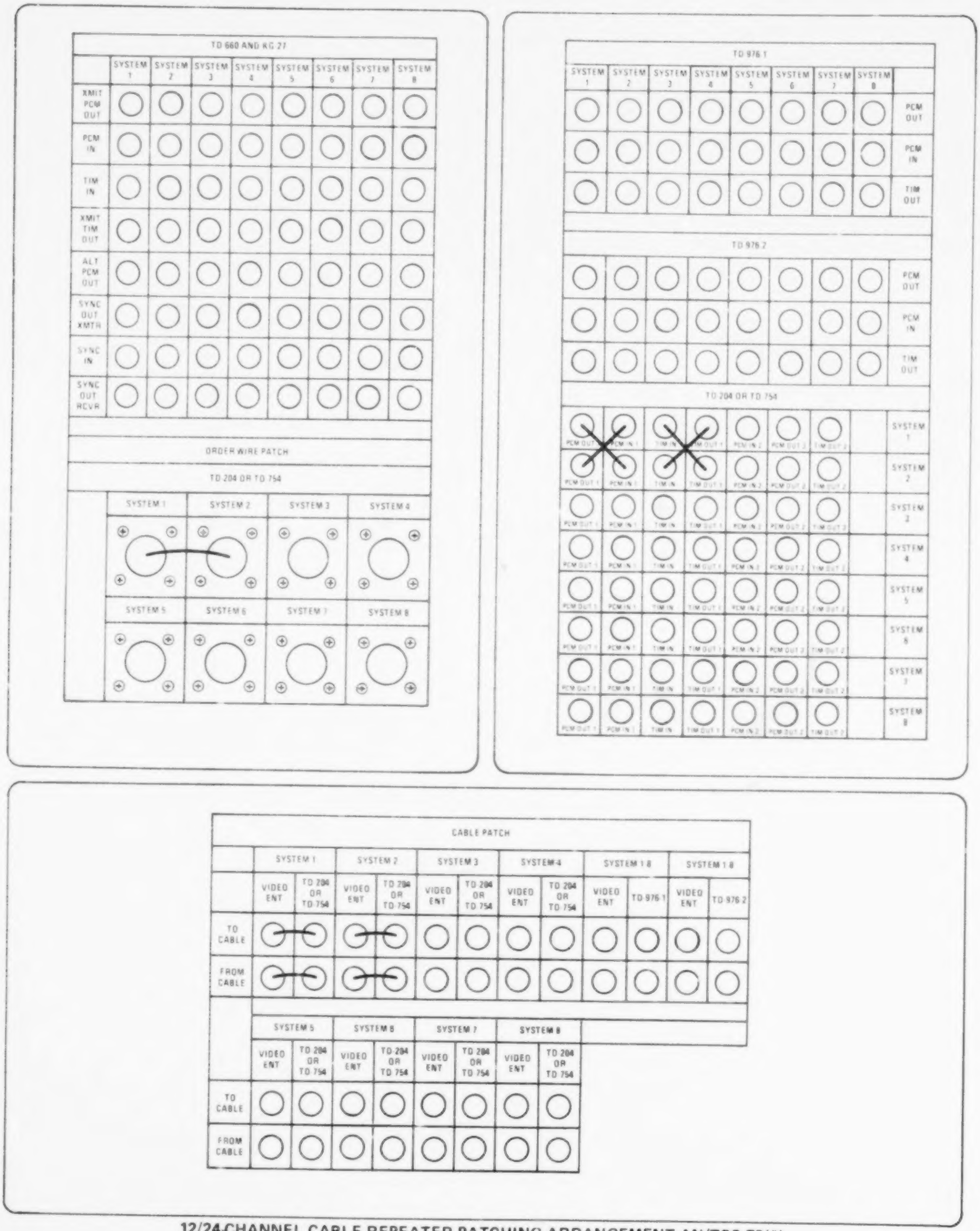
EL3TR186


XMSN
CABLE
TD 754/G
PCM
TIM
PCM
TIM
OW PATCH THRU
TD 754/G
XMSN
CABLE

*TRAFFIC SELECTOR SWITCH AT 48AR

NONSECURE 24-CHANNEL CABLE REPEATER AN/TCC 73(*).

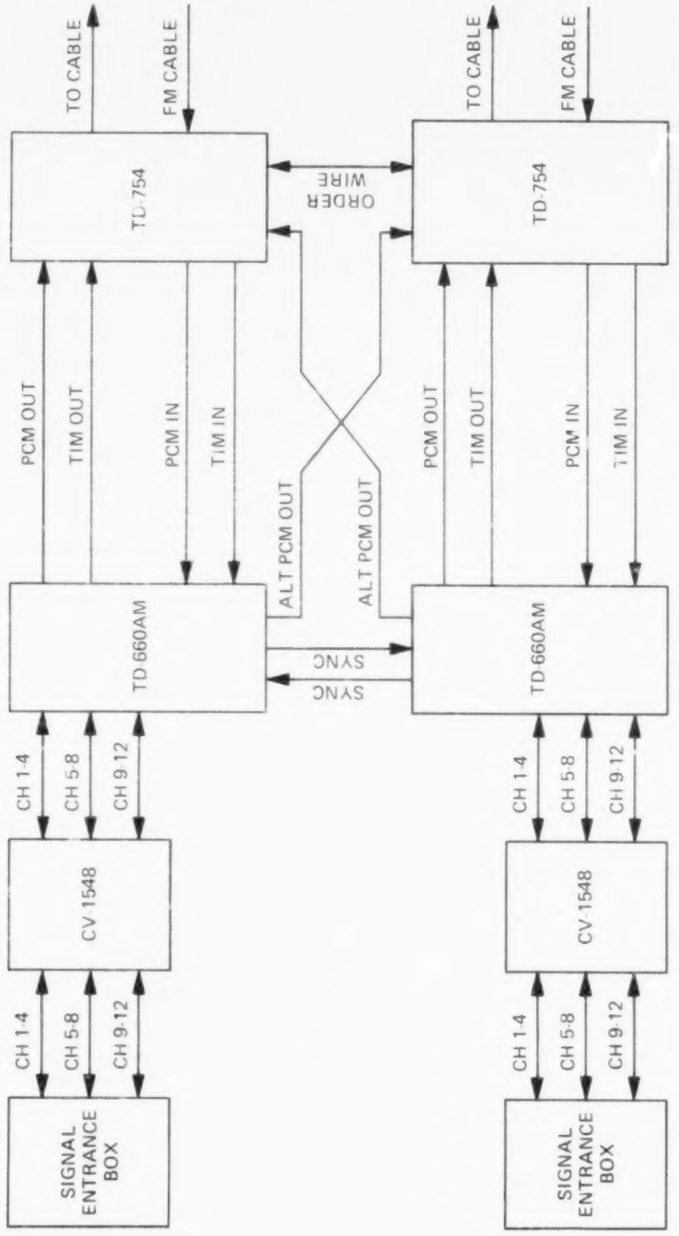
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976 1
PCM OUT
PCM IN
TIM OUT
TD 976 2
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
TO CABLE
FROM CABLE

12/24-CHANNEL CABLE REPEATER PATCHING ARRANGEMENT AN/TCC-73(*)

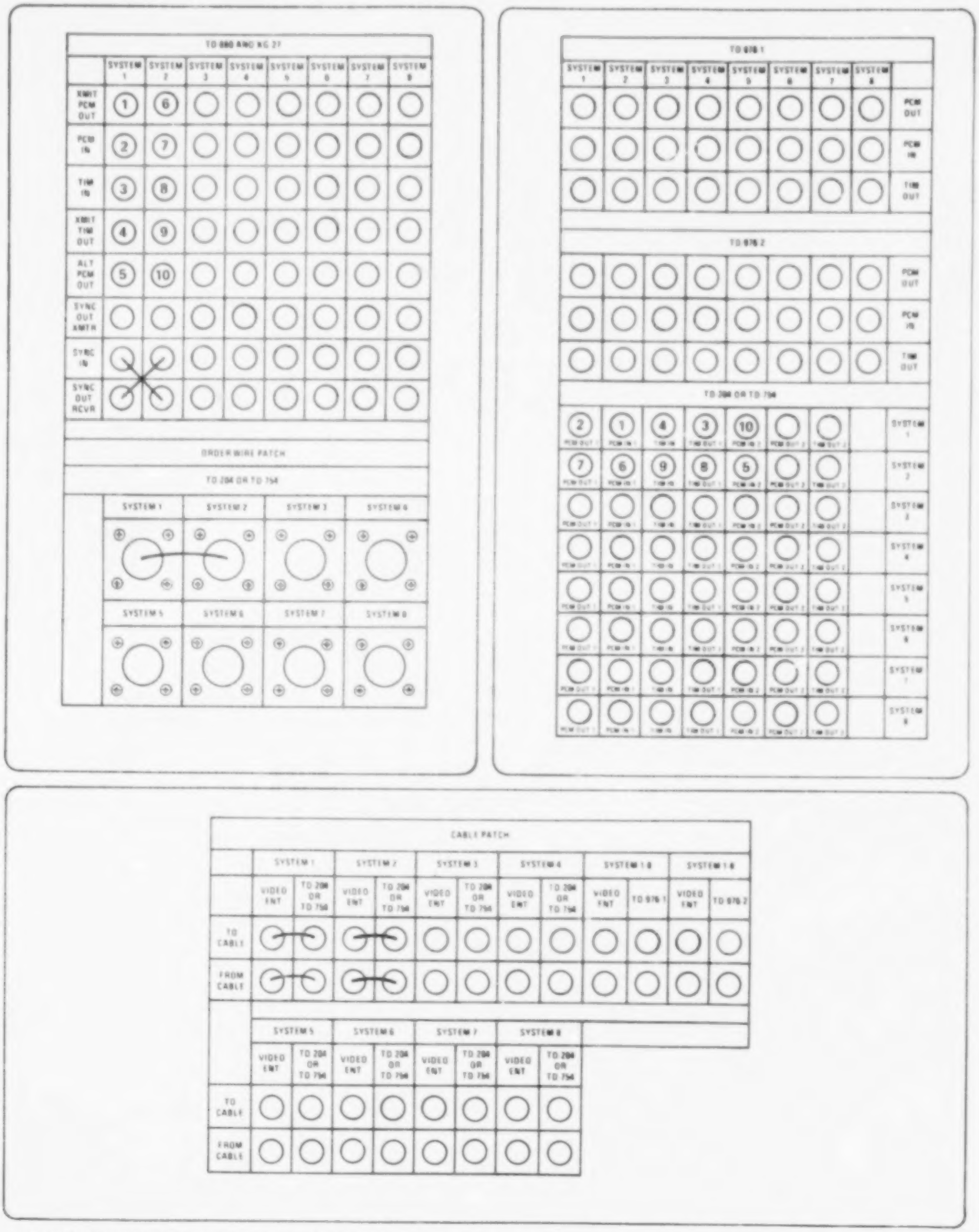
EL3TR187

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-754
ORDER WIRE
TO CABLE
FM CABLE
TD-754
PCM OUT
TIM OUT
PCM IN
TIM IN
ALT PCM OUT
ALT PCM OUT
PCM OUT
TIM OUT
PCM IN
TIM IN
TD-660AM
SYNC
SYNC
TD-660AM
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
EL3TR011

NONSECURE 24-CHANNEL TERMINAL WITH 12-CHANNEL DROP AND INSERT AN/TCC-73 (V) 2

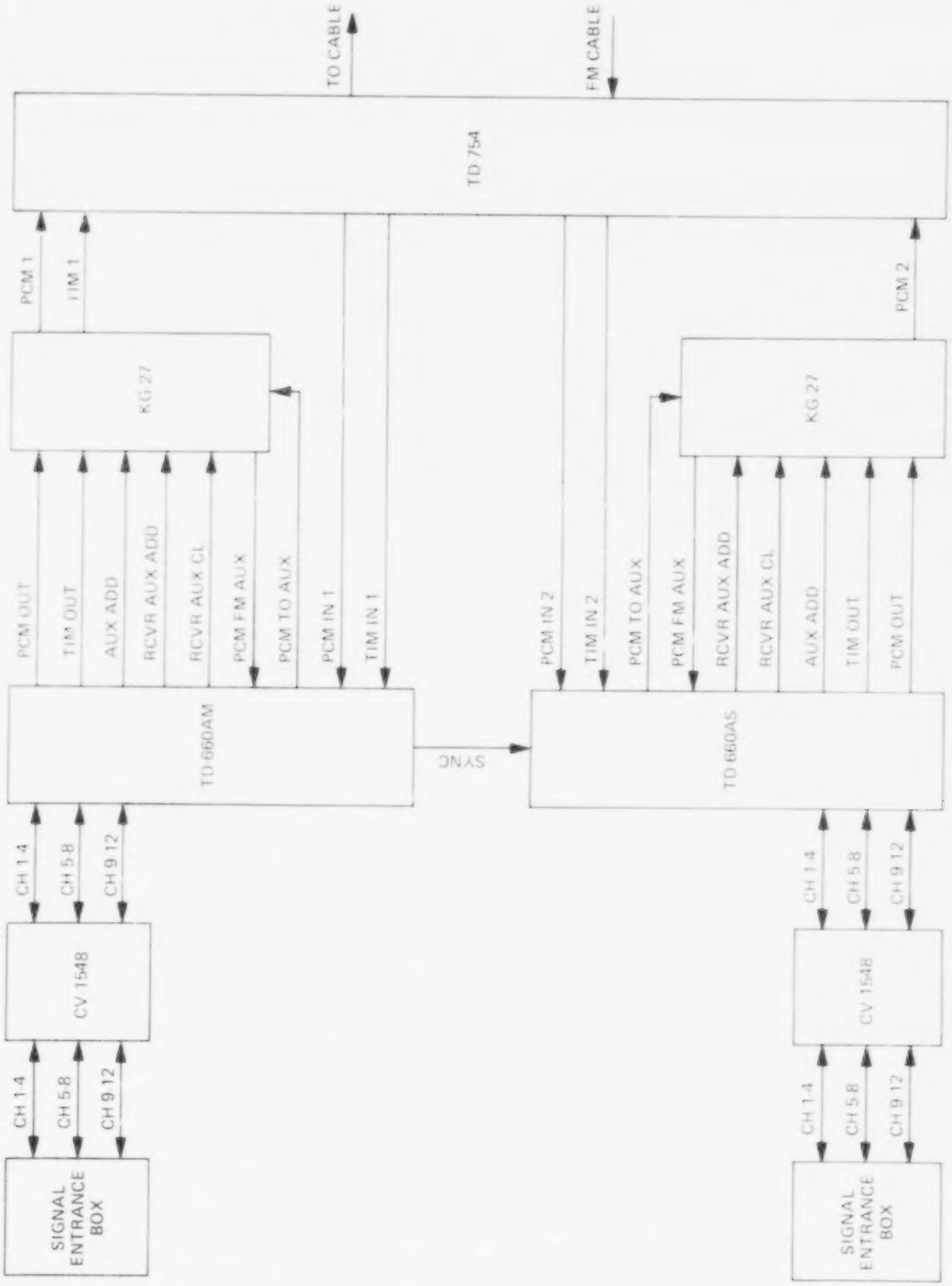
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO 880 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
8
9
10
ORDER WIRE PATCH
TO 204 OR TD 754
TO 976 1
PCM OUT
PCM IN
TIM OUT
TD 976 2
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
TO CABLE
FROM CABLE

24-CHANNEL CABLE TERMINAL WITH 12-CHANNEL DROP AND INSERT PATCHING ARRANGEMENT AN/TCC-73(V)2

EL3TR148

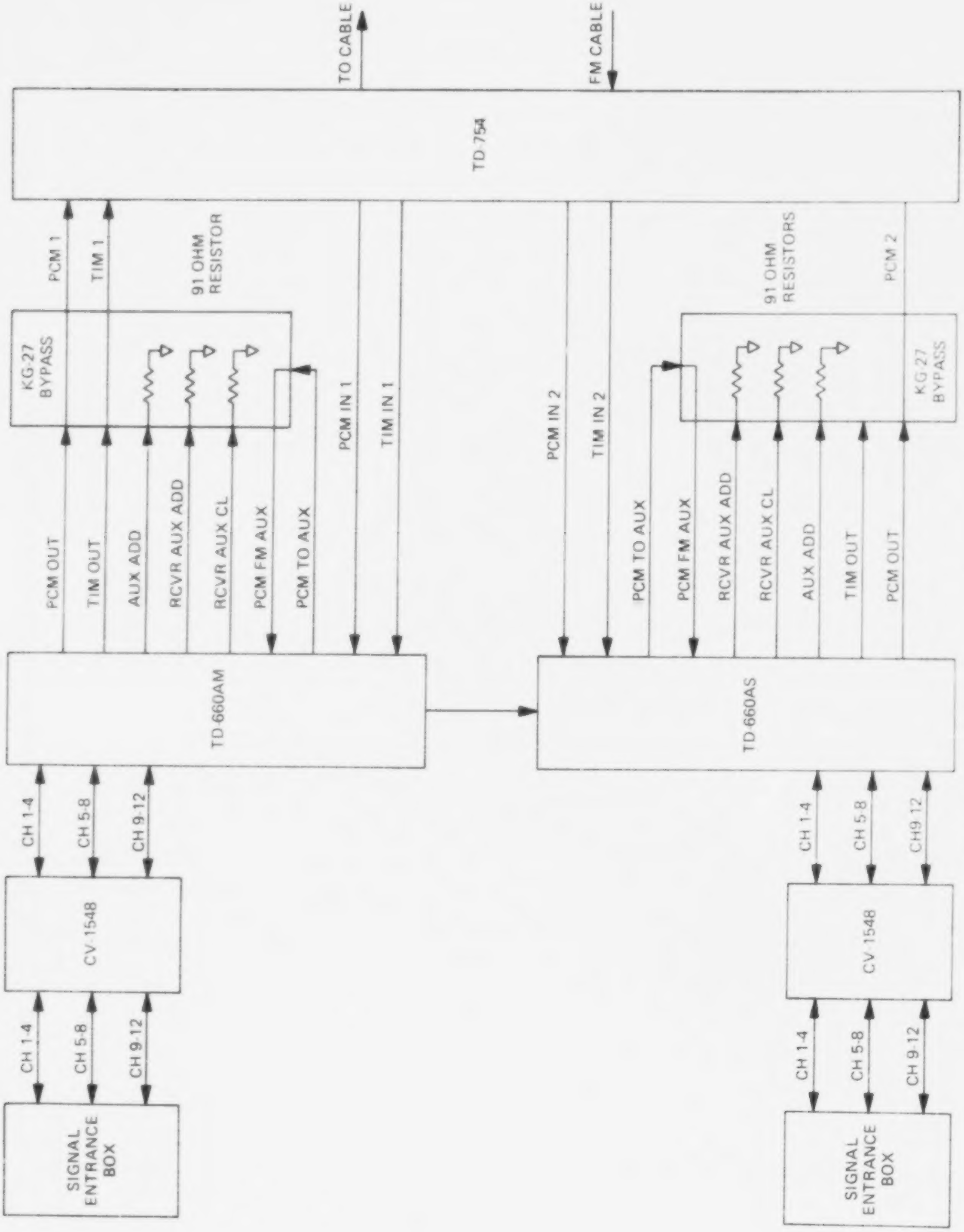
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD 754
PCM 1
TIM 1
PCM 2
KG 27
KG 27
PCM OUT
TIM OUT
AUX ADD
RCVR AUX ADD
RCVR AUX CL
PCM FM AUX
PCM TO AUX
PCM IN 1
TIM IN 1
PCM IN 2
TIM IN 2
PCM TO AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD 660AM
SYNC
TD 660AS
CH 1-4
CH 5-8
CH 9-12
CV 1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
CH 1-4
CH 5-8
CH 9-12
CV 1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX

EL3TR012

SECURE 24-CHANNEL TERMINAL AN/TCC-73(V)1 OR (V)2.

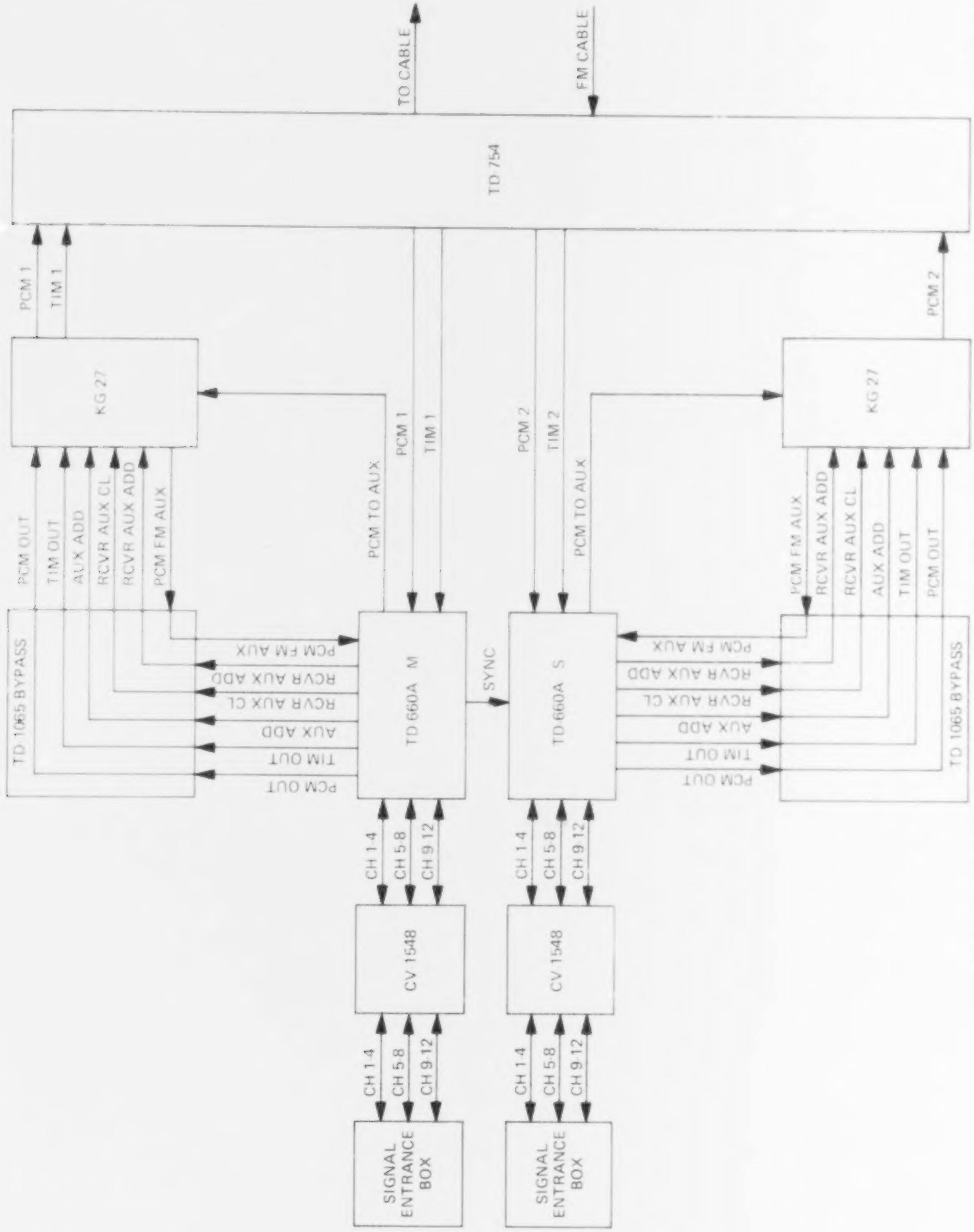
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD 754
PCM 1
TIM 1
91 OHM RESISTOR
KG-27 BYPASS
PCM IN 1
TIM IN 1
PCM OUT
TIM OUT
AUX ADD
RCVR AUX ADD
RCVR AUX CL
PCM FM AUX
PCM TO AUX
TD 660AM
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
PCM IN 2
TIM IN 2
91 OHM RESISTORS
PCM 2
KG 27 BYPASS
PCM TO AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD 660AS
CH 1-4
CH 5-8
CH9-12
CV 1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX

NONSECURE 24-CHANNEL TERMINAL WITH KG 27 BYPASSED AN/TCC 73(V)1 OR (V)2

EL3TR188

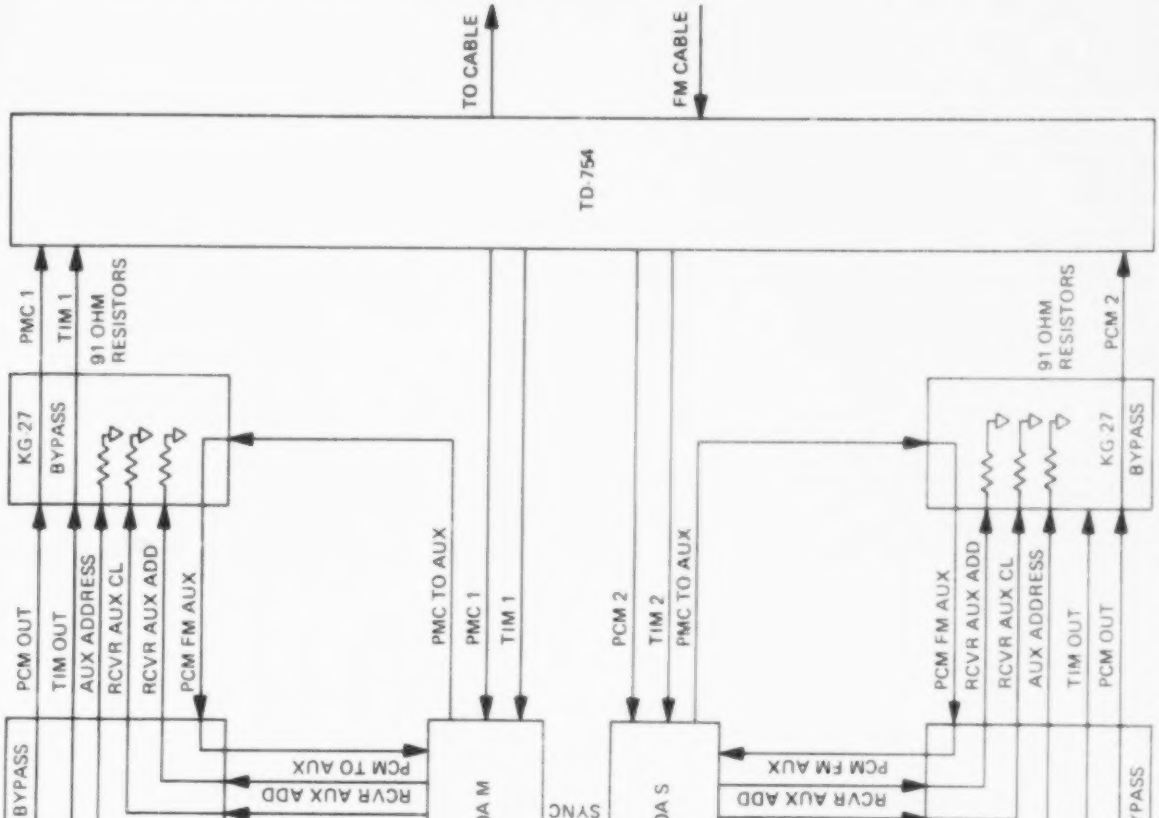
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD 754
PCM 1
TIM 1
PCM 2
KG 27
KG 27
PCM TO AUX
PCM 1
TIM 1
PCM 2
TIM 2
PCM TO AUX
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD 1065 BYPASS
TD 1065 BYPASS
TD 660A M
SYNC
TD 660A S
CH 1-4
CH 5-8
CH 9-12
CV 1548
CV 1548
SIGNAL ENTRANCE BOX
SIGNAL ENTRANCE BOX

EL3TR010

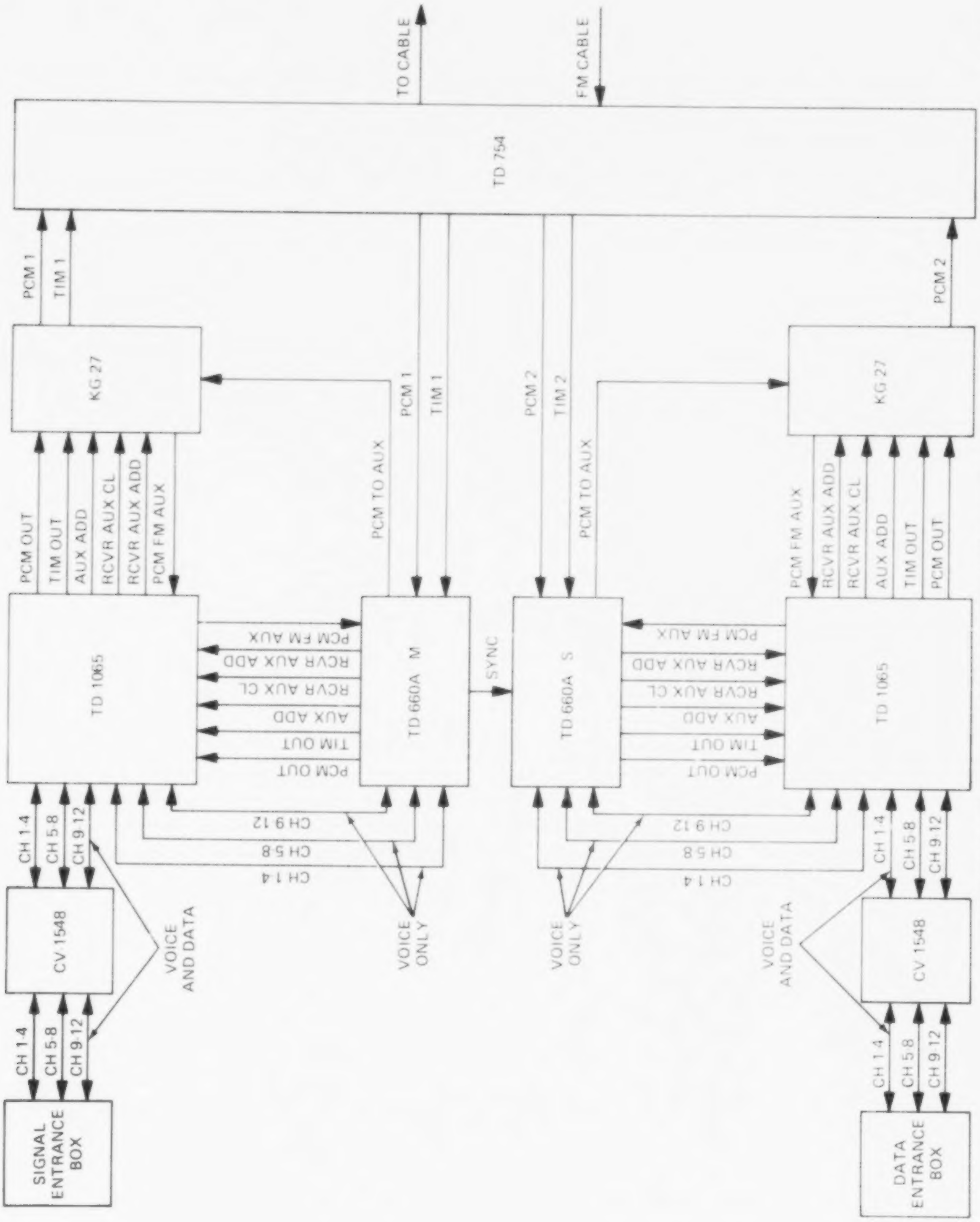
SECURE 24-CHANNEL TERMINAL WITH TD-1065/G BYPASSED AN/TCC 73A(V)1OR A(V)2

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


EL3TR189
TO CABLE
FM CABLE
TD-754
PMC 1
TIM 1
91 OHM RESISTORS
KG-27
BYPASS
PCM OUT
TIM OUT
AUX ADDRESS
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PMC TO AUX
PMC 1
TIM 1
PCM 2
TIM 2
PMC TO AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADDRESS
TIM OUT
PCM OUT
91 OHM RESISTORS
PCM 2
KG-27
BYPASS
TD-1065 BYPASS
PCM TO AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PMC OUT
TD-660A M
SYNC
TD-660A S
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD-1065 BYPASS
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
CH 1-4
CH 5-8
CH 9-12
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX

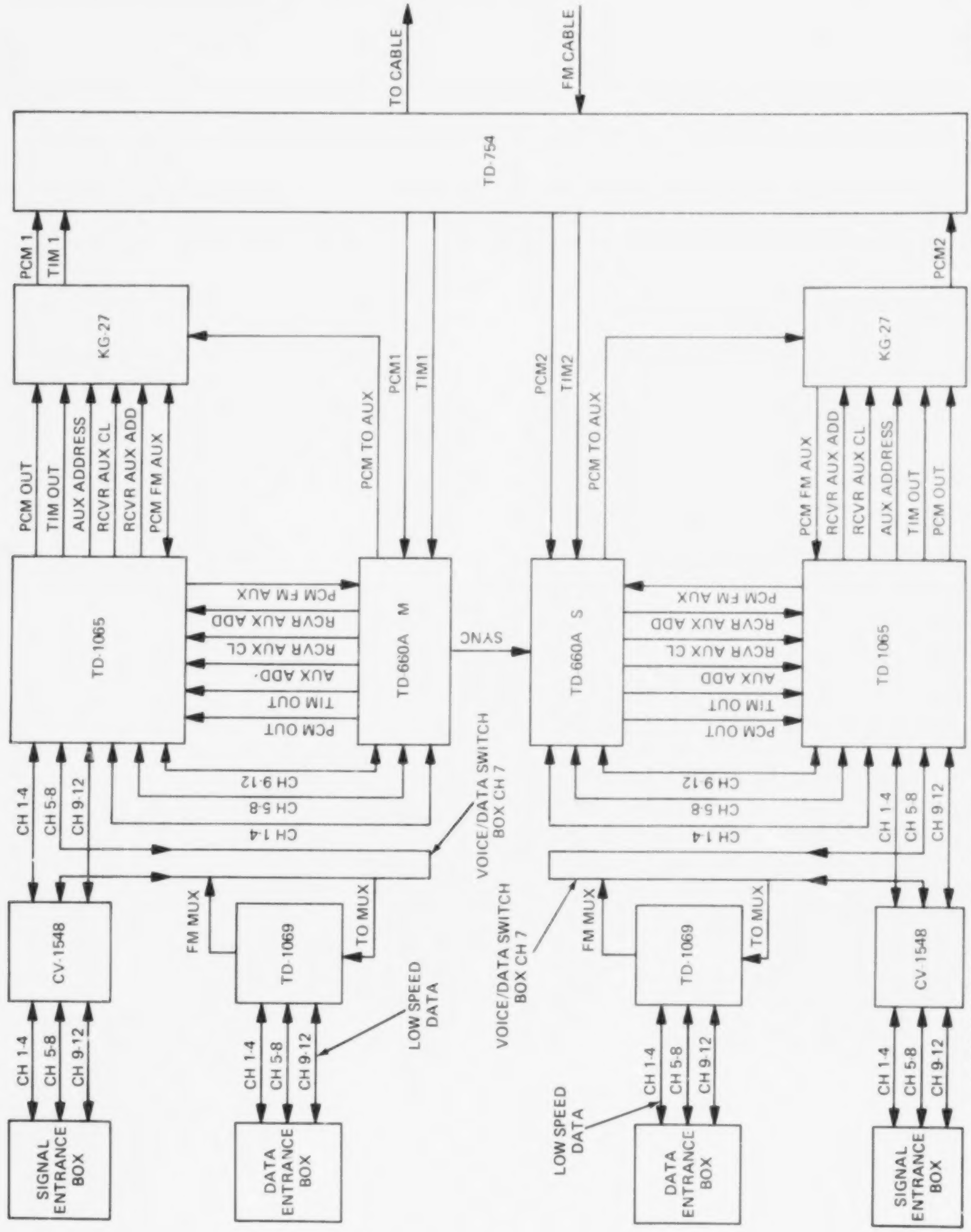
NONSECURE 24-CHANNEL TERMINAL WITH TD-1065/G AND KG-27 BYPASSED AN/TCC-73A(V)1 OR A(V)2.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD 754
PCM 1
TIM 1
PCM 2
KG 27
KG 27
PCM TO AUX
PCM 1
TIM 1
PCM 2
TIM 2
PCM TO AUX
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
TD 1065
TD 660A M
SYNC
TD 660A S
TD 1065
CH 1-4
CH 5-8
CH 9-12
CV 1548
CV 1548
VOICE AND DATA
VOICE ONLY
SIGNAL ENTRANCE BOX
DATA ENTRANCE BOX
EL3TR166

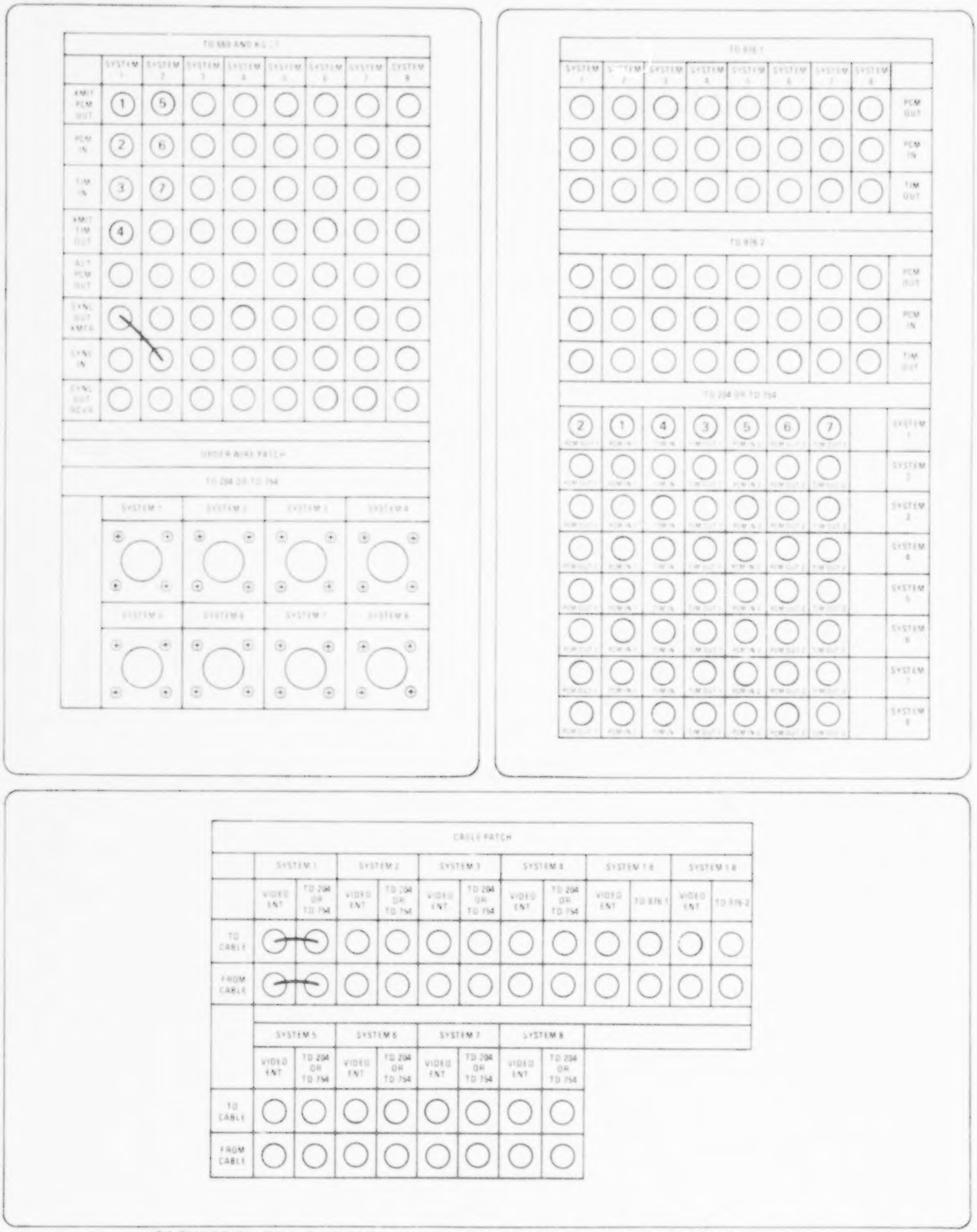
SECURE 24 CHANNEL TERMINAL WITH TD-1065/G AN/TCC 73A(V)1 OR (V)2.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-754
PCM 1
TIM 1
KG-27
PCM OUT
TIM OUT
AUX ADDRESS
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
PCM1
TIM1
PCM2
TIM2
PCM TO AUX
PCM2
KG-27
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADDRESS
TIM OUT
PCM OUT
TD-1065
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD-660A M
SYNC
TD-660A S
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD 1065
CH 9-12
CH 5-8
CH 1-4
CH 1-4
CH 5-8
CH 9-12
CH 9-12
CH 5-8
CH 1-4
CH 1-4
CH 5-8
CH 9-12
VOICE/DATA SWITCH BOX CH 7
VOICE/DATA SWITCH BOX CH 7
FM MUX
TO MUX
FM MUX
TO MUX
CV-1548
TD-1069
TD-1069
CV-1548
LOW SPEED DATA
LOW SPEED DATA
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
DATA ENTRANCE BOX
DATA ENTRANCE BOX
SIGNAL ENTRANCE BOX
EL3TR190

SECURE 24-CHANNEL CABLE TERMINAL WITH TD-1065/G AND TD-1069/G (SYSTEM 1 AND 2) AN/TCC-73A(V)1 OR A(V)2.

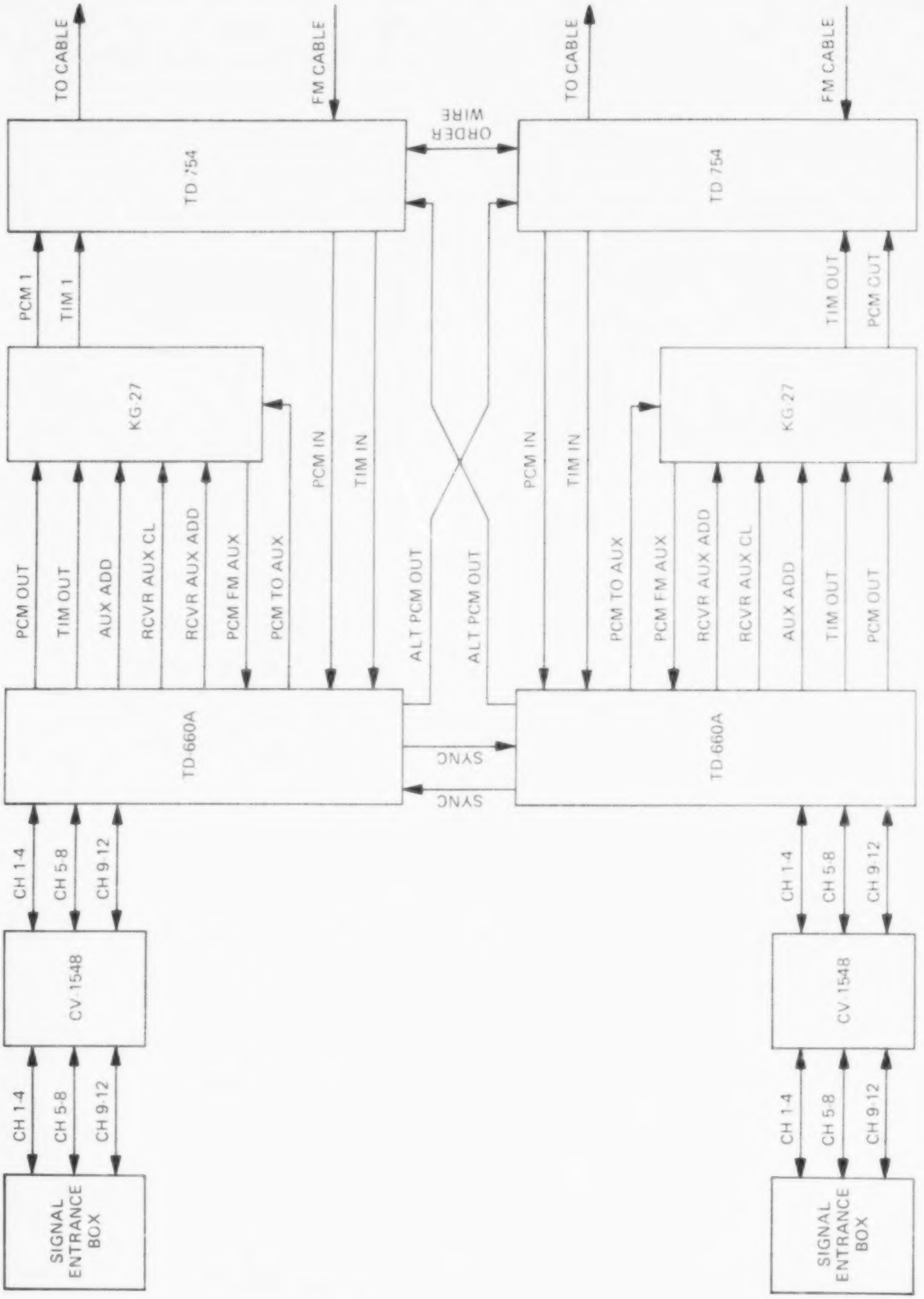
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO 880 AND KG
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
ORDER WIRE PATCH
TO 204 OR TO 754
TO 976 1
PCM OUT
PCM IN
TIM OUT
TO 976 2
TO 204 OR TO 754
CABLE PATCH
VIDEO ENT
TO 204 OR TO 754
TO 976 1
TO 976 2
TO CABLE
FROM CABLE

24-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC 73 (*)

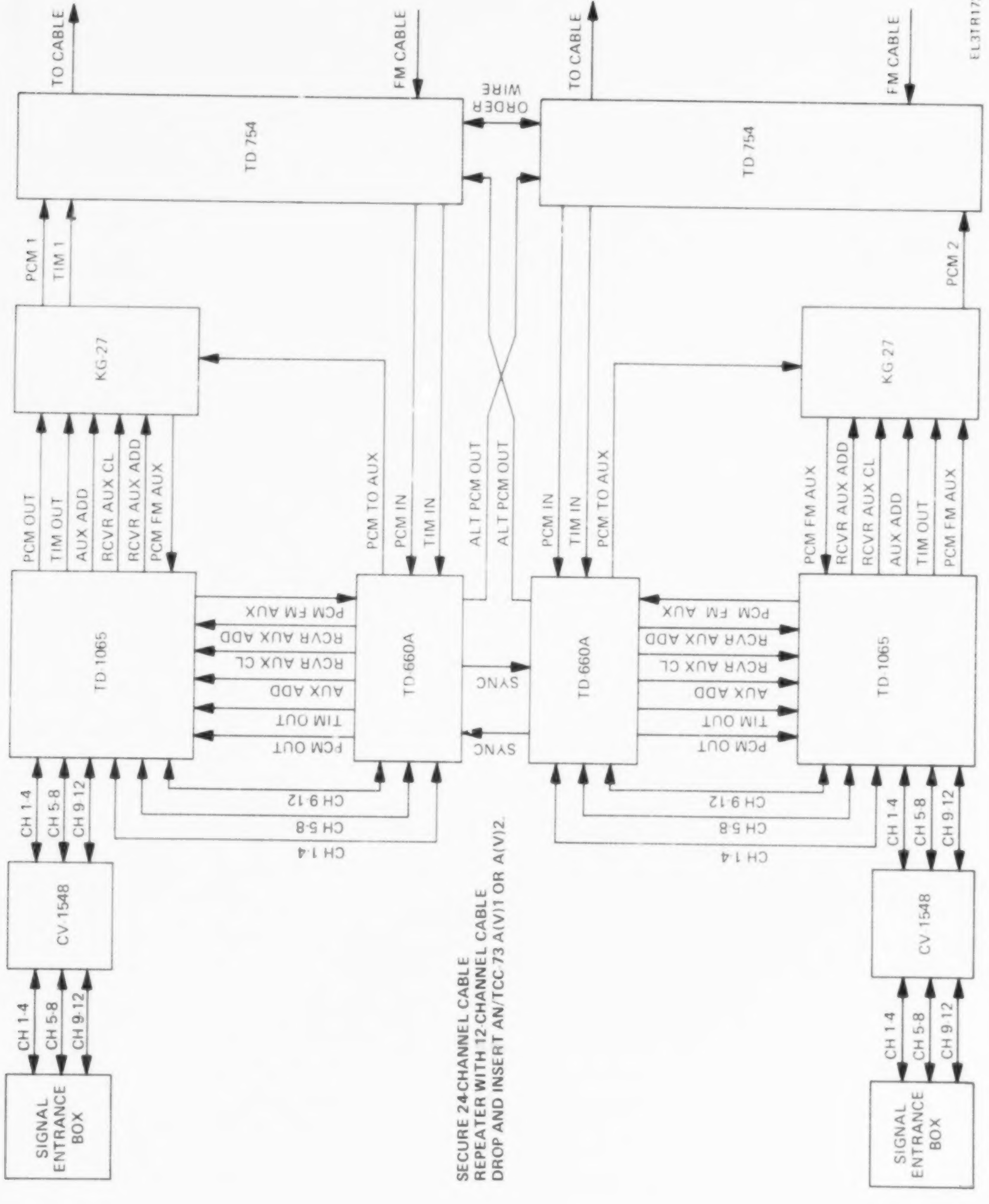
EL3TR141

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TO CABLE
FM CABLE
ORDER WIRE
TD 754
TD 754
PCM 1
TIM 1
TIM OUT
PCM OUT
KG-27
KG-27
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
PCM IN
TIM IN
ALT PCM OUT
ALT PCM OUT
PCM IN
TIM IN
PCM TO AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
TD-660A
TD-660A
SYNC
SYNC
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
CV-1548
CV-1548
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
SIGNAL ENTRANCE BOX
EL3TR191

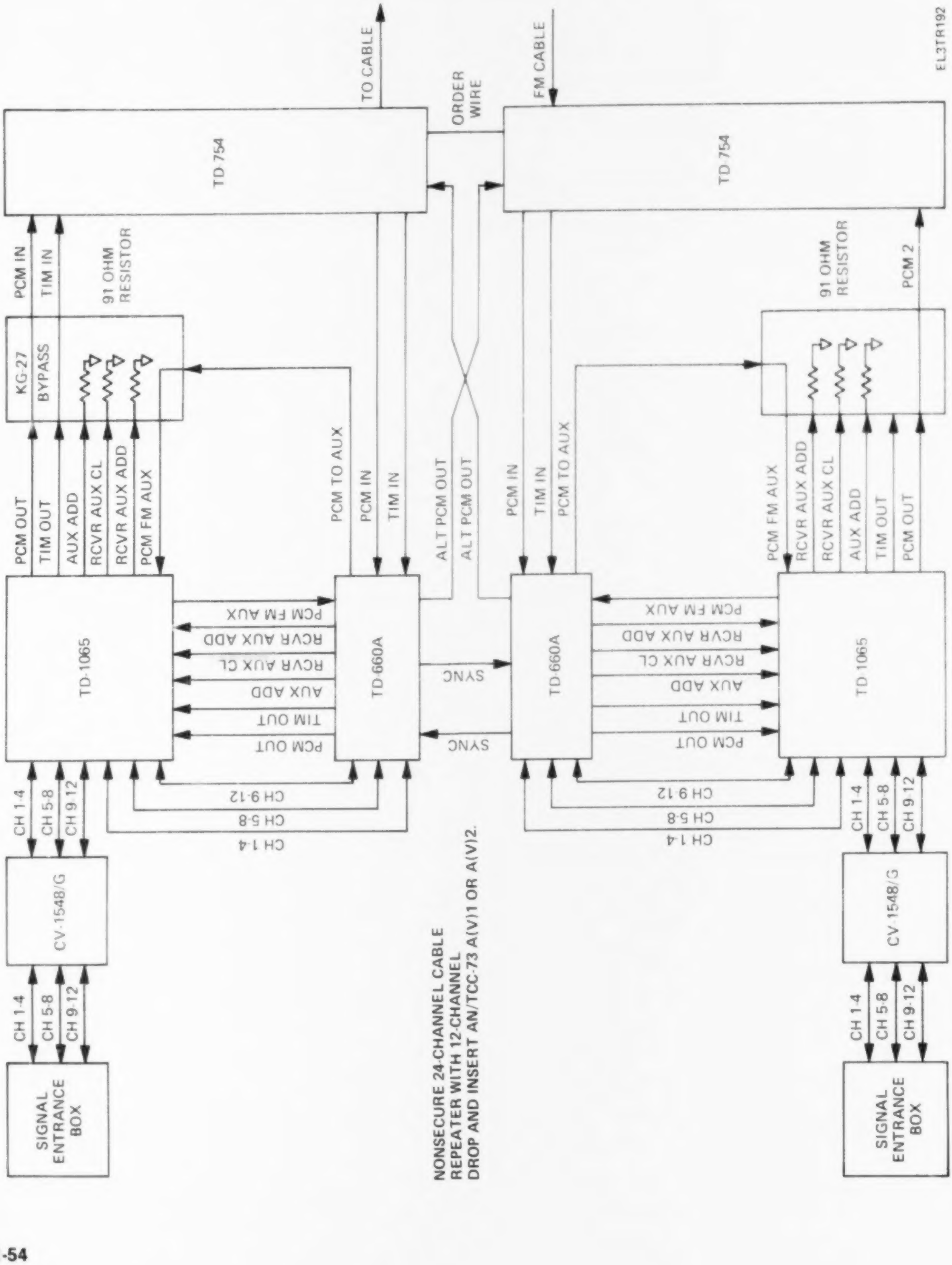
SECURE 24-CHANNEL CABLE REPEATER WITH 12-CHANNEL DROP AND INSERT AN/TCC-73(V)2

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TO CABLE
FM CABLE
ORDER WIRE
EL3TR172
TD 754
TD 754
PCM 1
TIM 1
PCM 2
KG-27
KG 27
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
PCM IN
TIM IN
ALT PCM OUT
ALT PCM OUT
PCM IN
TIM IN
PCM TO AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM FM AUX
TD 1065
TD 660A
TD 660A
TD 1065
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
SYNC
SYNC
CH 9-12
CH 5-8
CH 1-4
CH 1-4
CH 5-8
CH 9-12
CV 1548
CV 1548
SIGNAL ENTRANCE BOX
SIGNAL ENTRANCE BOX

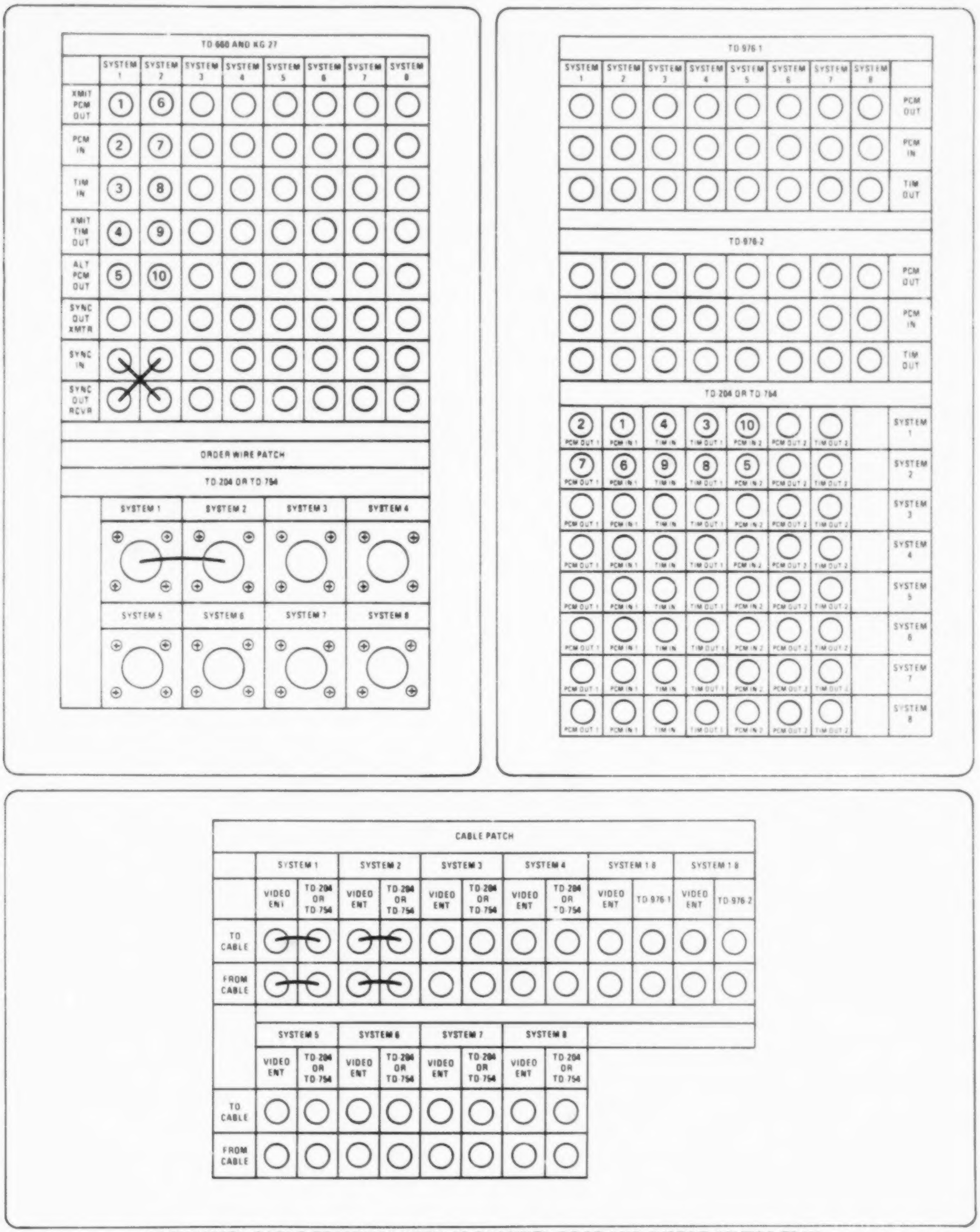
SECURE 24-CHANNEL CABLE
REPEATER WITH 12-CHANNEL CABLE
DROP AND INSERT AN/TCC 73 A(V)1 OR A(V)2.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
ORDER WIRE
EL3TR192
TD-754
TD-754
PCM IN
TIM IN
91 OHM RESISTOR
KG-27
BYPASS
PCM 2
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
PCM IN
TIM IN
ALT PCM OUT
ALT PCM OUT
TD-1065
TD-660A
TD-660A
TD-1065
SYNC
SYNC
CH 1-4
CH 5-8
CH 9-12
CV-1548/G
SIGNAL ENTRANCE BOX
SIGNAL ENTRANCE BOX

NONSECURE 24-CHANNEL CABLE REPEATER WITH 12-CHANNEL DROP AND INSERT AN/TCC-73 A(V)1 OR A(V)2.

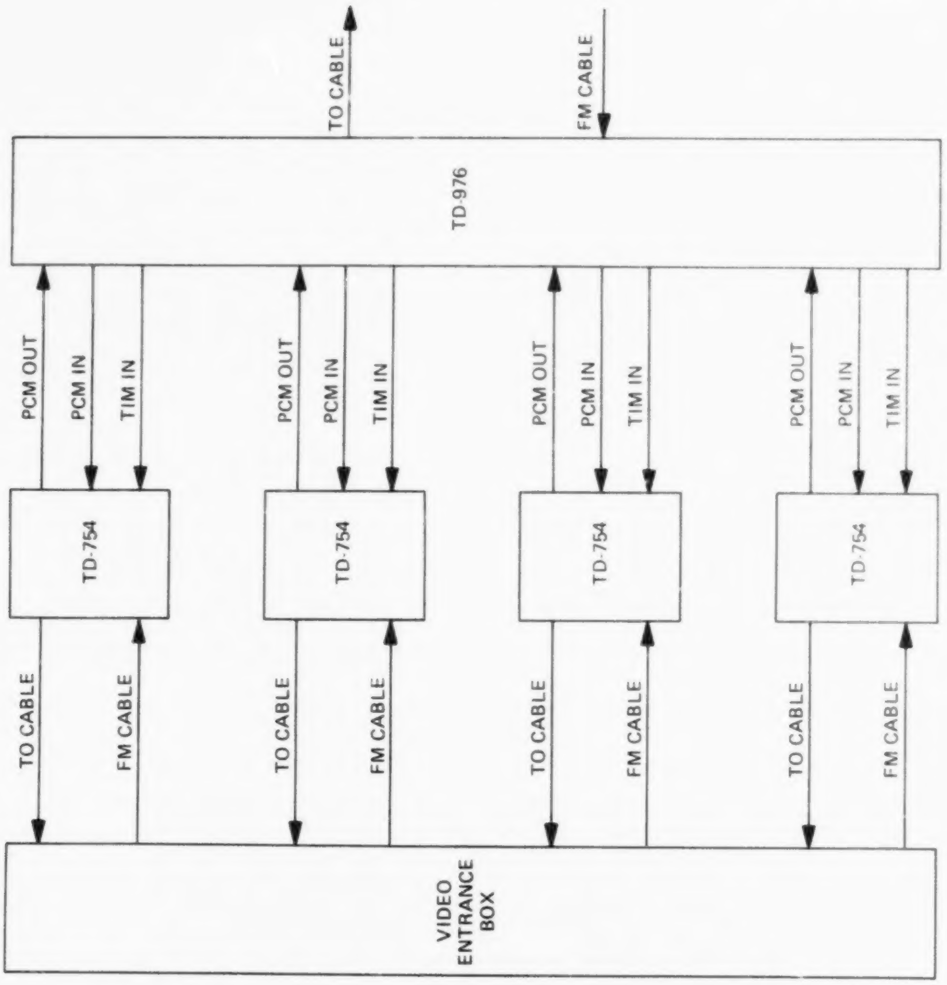
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
8
9
10
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976-1
TD 976-2
PCM OUT
PCM IN
TIM OUT
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976-1
TD 976-2
TO CABLE
FROM CABLE

24-CHANNEL CABLE TERMINAL WITH 12-CHANNEL DROP AND INSERT AN/TCC-73 (*)

EL3TR140

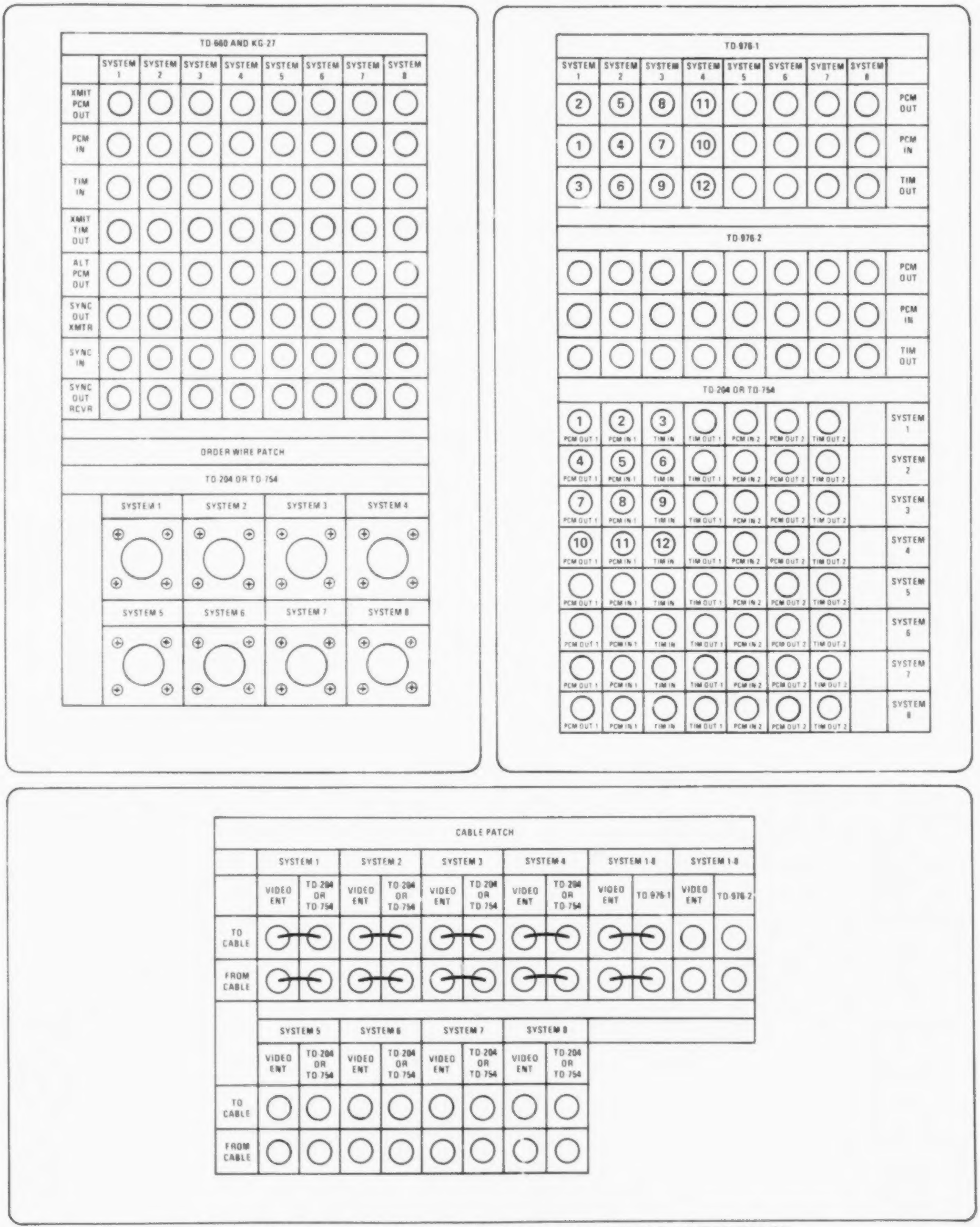
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-976
PCM OUT
PCM IN
TIM IN
PCM OUT
PCM IN
TIM IN
PCM OUT
PCM IN
TIM IN
PCM OUT
PCM IN
TIM IN
TD-754
TD-754
TD-754
TD-754
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
VIDEO
ENTRANCE
BOX

NONSECURE 48-CHANNEL TERMINAL AN/TCC-73(V)1.

EL3TR173

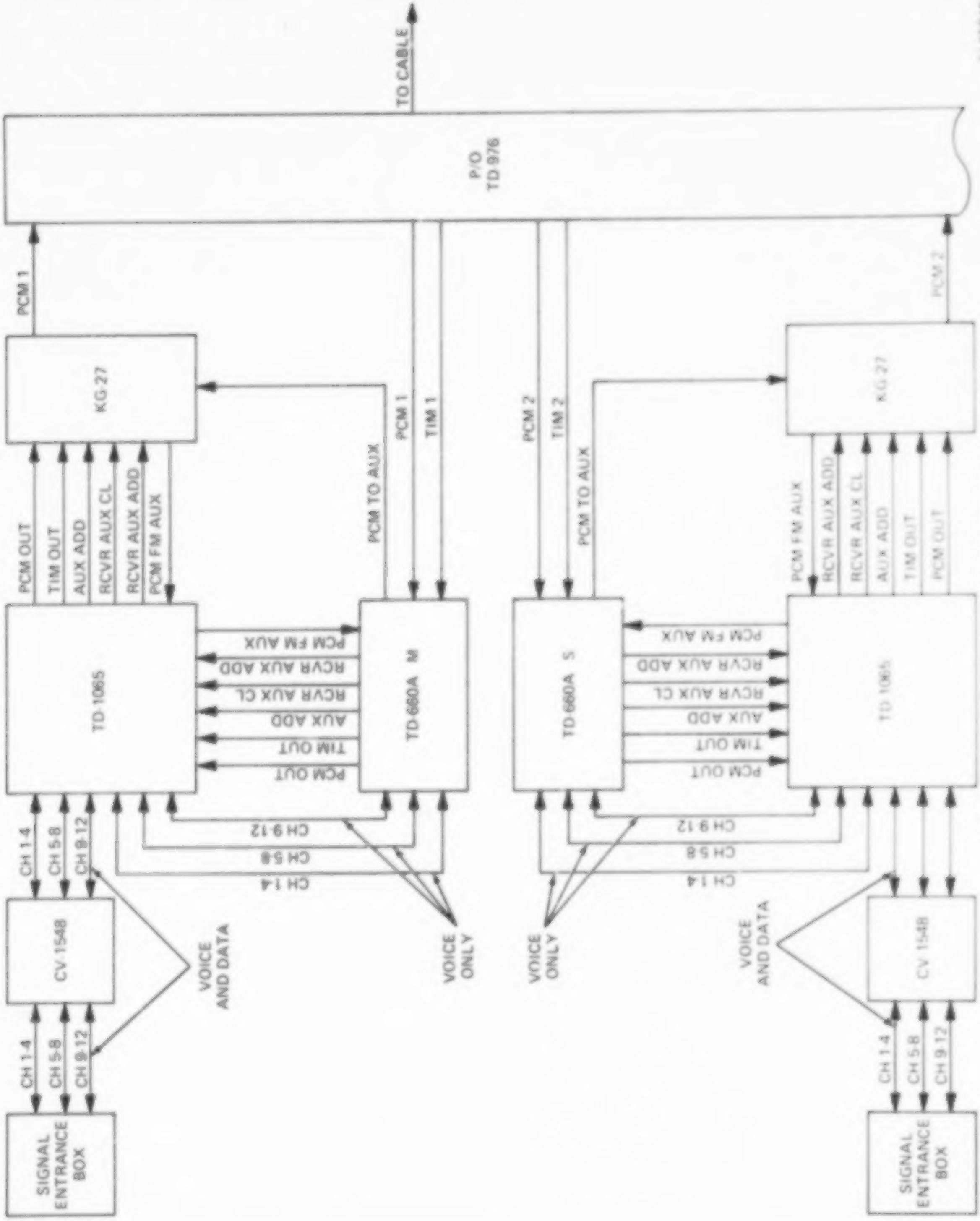
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD-660 AND KG-27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
ORDER WIRE PATCH
TD-204 OR TD-754
TD-976-1
PCM OUT
PCM IN
TIM OUT
1
2
3
4
5
6
7
8
9
10
11
12
TD-976-2
TD-204 OR TD-754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD-204 OR TD-754
TD-976-1
TD-976-2
TO CABLE
FROM CABLE

48-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(V)1

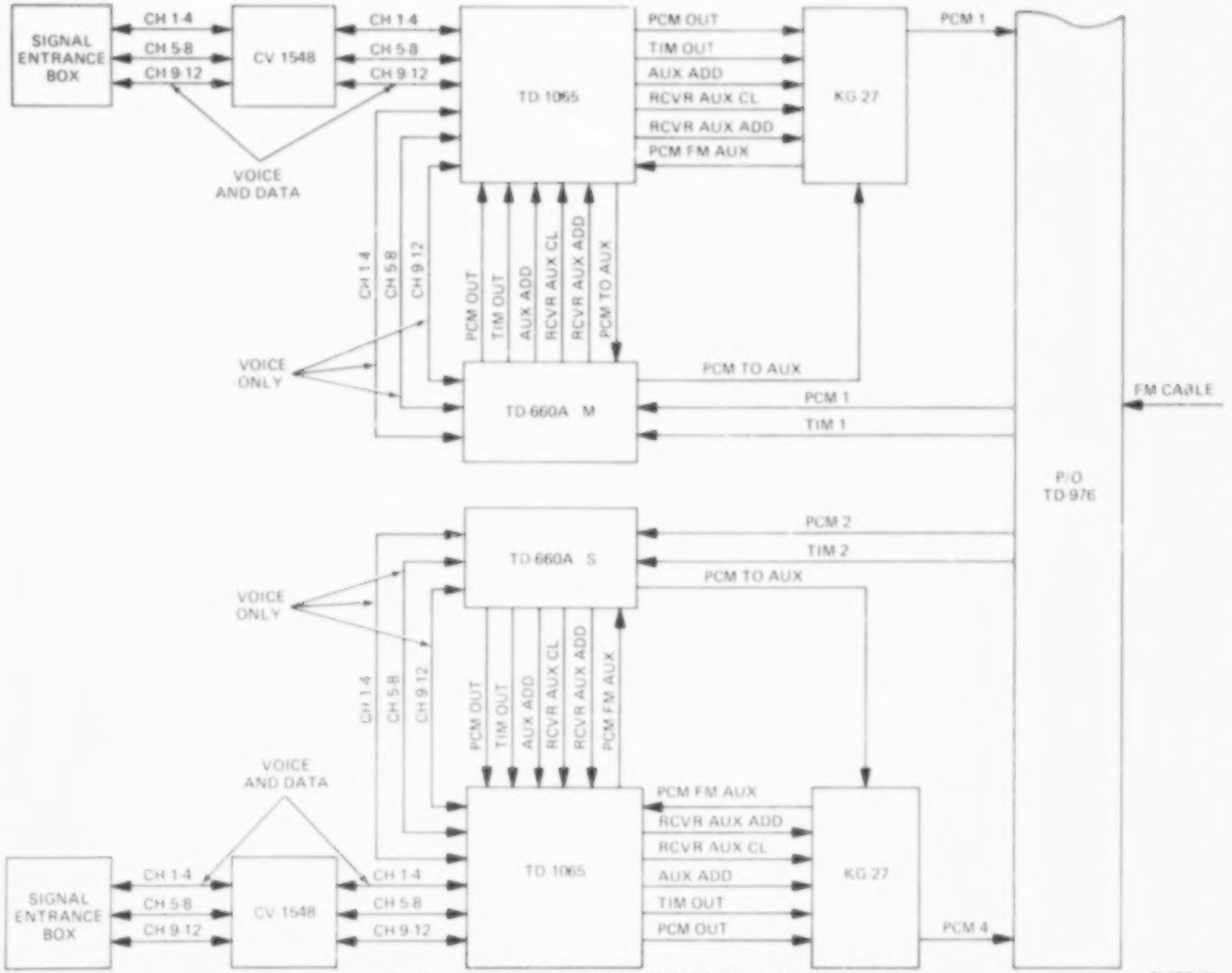
EL3TR193

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
P/O TD-976
PCM 1
PCM 2
KG-27
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
TIM 1
TIM 2
TD-1065
TD-660A M
TD-660A S
CH 1-4
CH 5-8
CH 9-12
CV-1548
VOICE AND DATA
VOICE ONLY
SIGNAL ENTRANCE BOX
EL3TR194

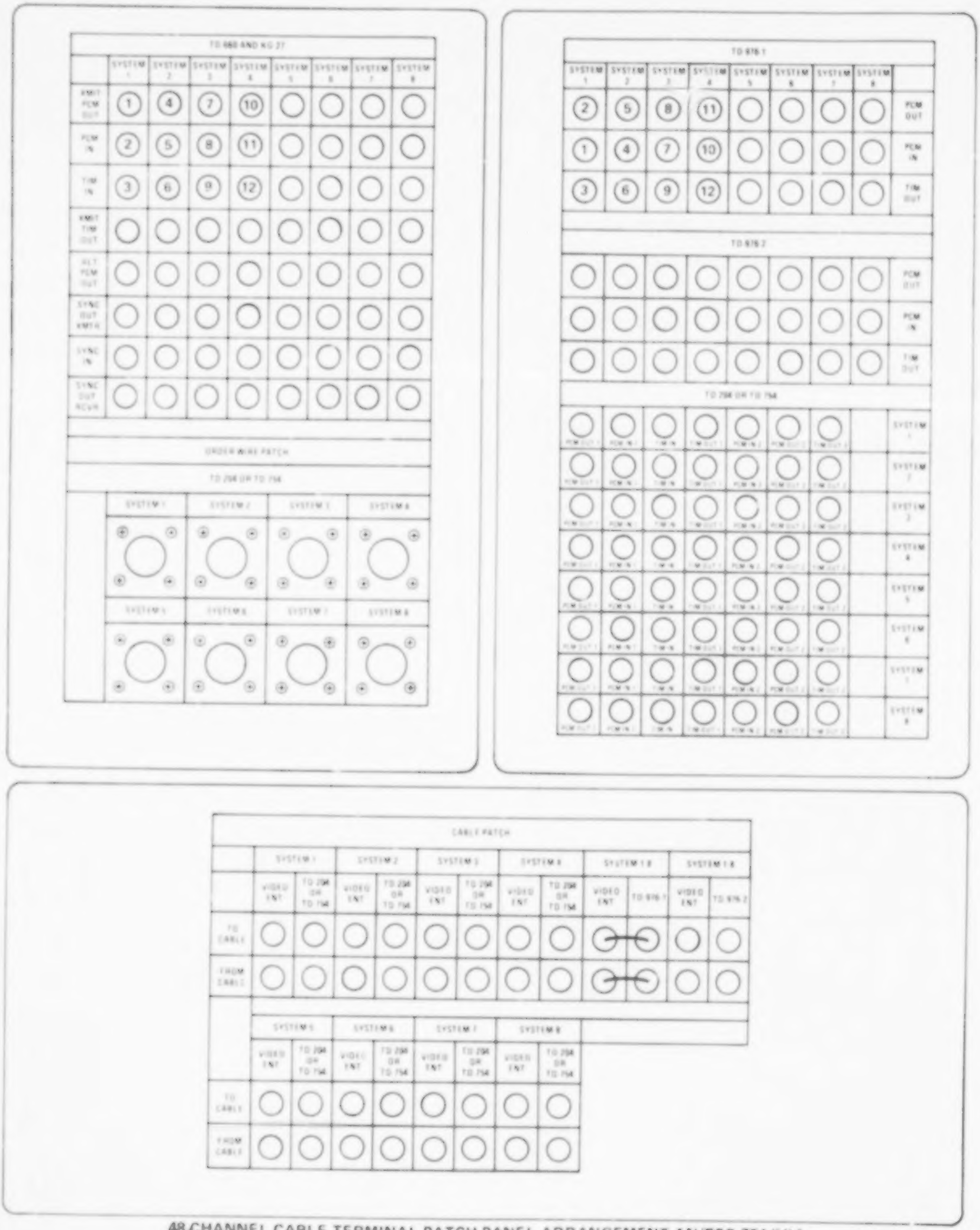
SECURE 48-CHANNEL TERMINAL WITH TD-1065/G AN/TCC-73A(V)1

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


SIGNAL ENTRANCE BOX
CH 1-4
CH 5-8
CH 9-12
CV 1548
VOICE AND DATA
TD 1065
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
KG 27
PCM 1
PCM TO AUX
VOICE ONLY
TD 660A M
TIM 1
FM CABLE
P/O TD 976
PCM 2
TIM 2
TD 660A S
PCM 4
EL3TR195

SECURE 48-CHANNEL TERMINAL WITH TD-1065/G AN/TCC-73A(V)1.

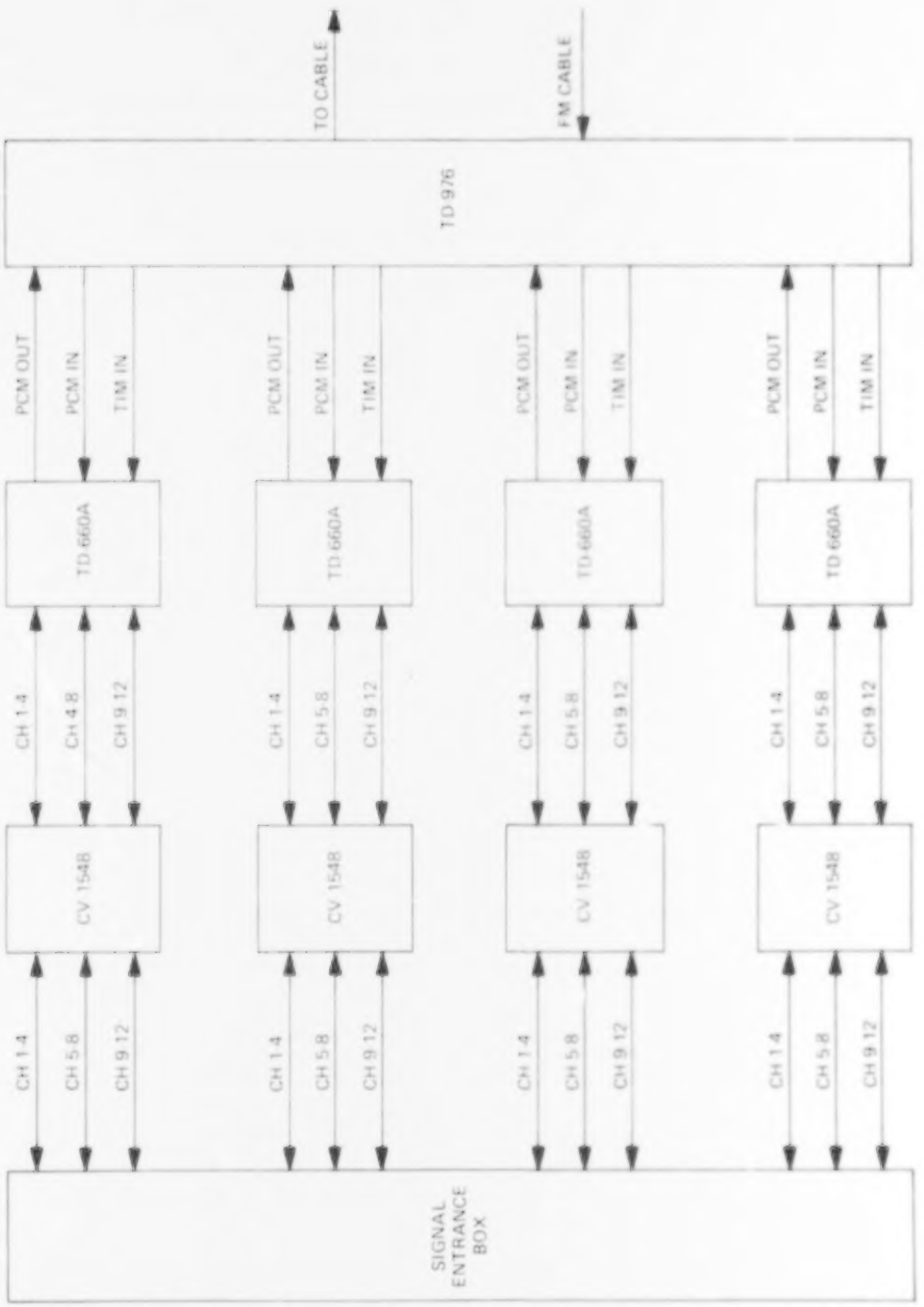
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
8
9
10
11
12
ORDER WIRE PATCH
TO 204 OR TO 754
TO 976 1
PCM OUT
PCM IN
TIM OUT
TO 976 2
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1 8
VIDEO ENT
TO 204 OR TO 754
TO 976 1
TO 976 2
TO CABLE
FROM CABLE

48 CHANNEL CABLE TERMINAL PATCH PANEL ARRANGEMENT AN/TCC-73A(V)1

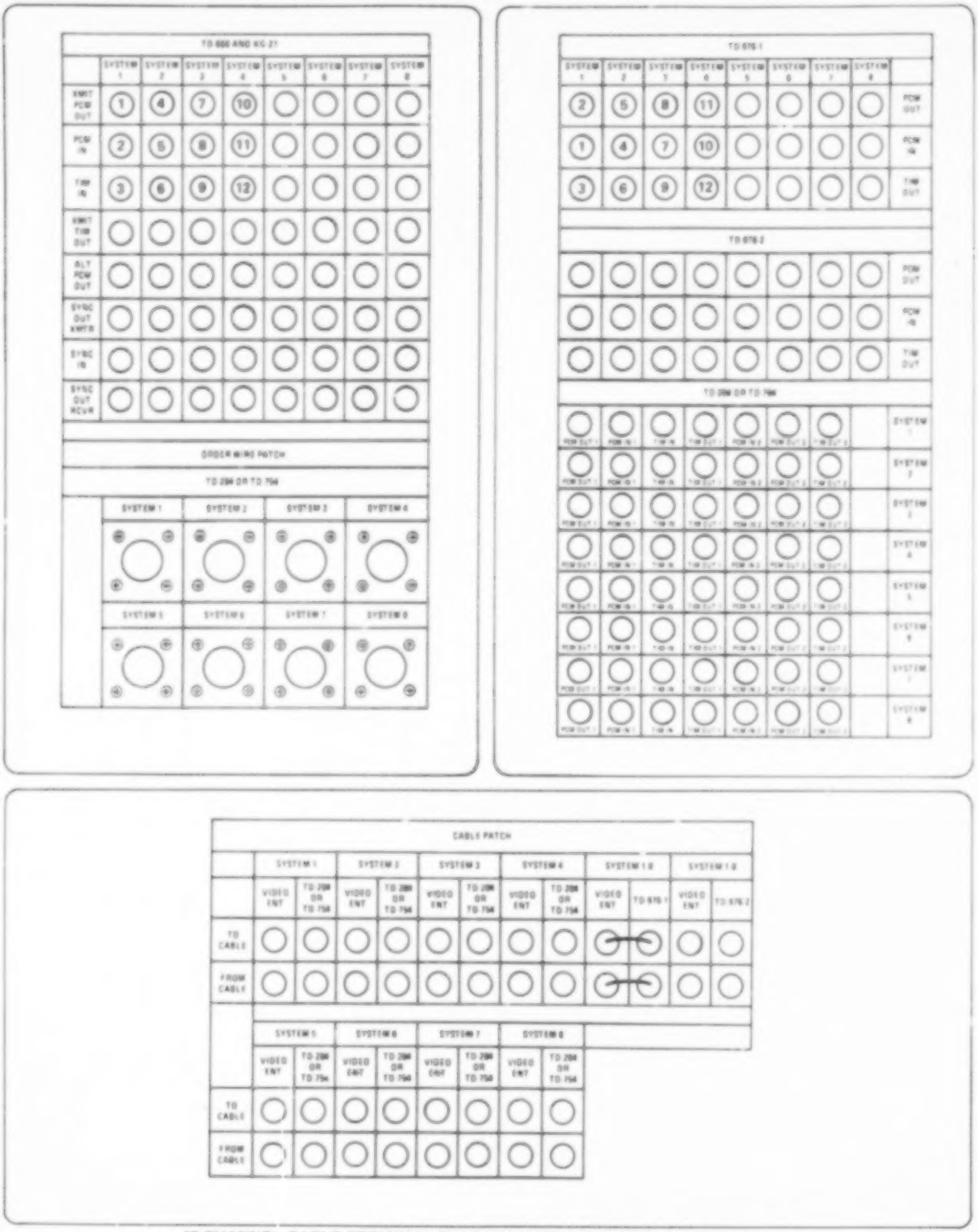
EL3TR139

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-976
PCM OUT
PCM IN
TIM IN
TD-660A
CH 1-4
CH 4-8
CH 5-8
CH 9-12
CV-1548
SIGNAL ENTRANCE BOX
EL3TR175

NONSECURE 48-CHANNEL TERMINAL AN/TCC-73(V)1

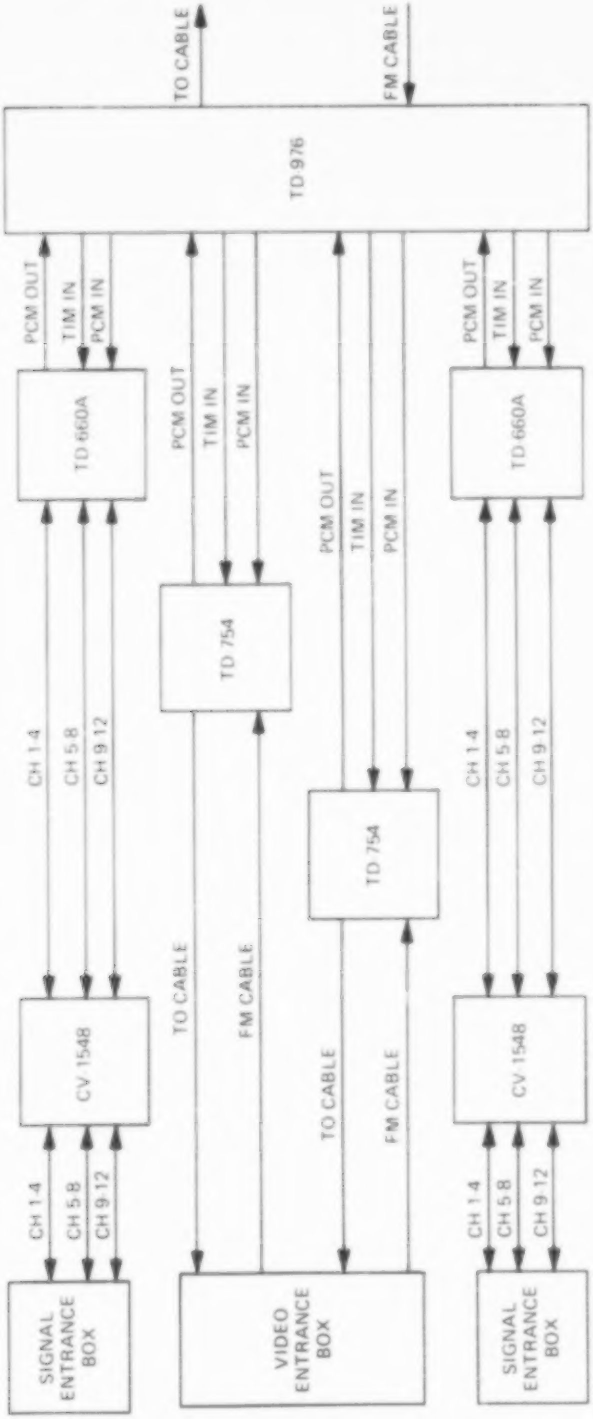
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO 606 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
8
9
10
11
12
ORDER WIRE PATCH
TO 204 OR TO 754
TO 976 1
PCM OUT
PCM IN
TIM OUT
TO 976 2
CABLE PATCH
VIDEO ENT
TO 204 OR TO 754
TO 976 1
TO 976 2
TO CABLE
FROM CABLE

48-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(V)1

EL3TR138

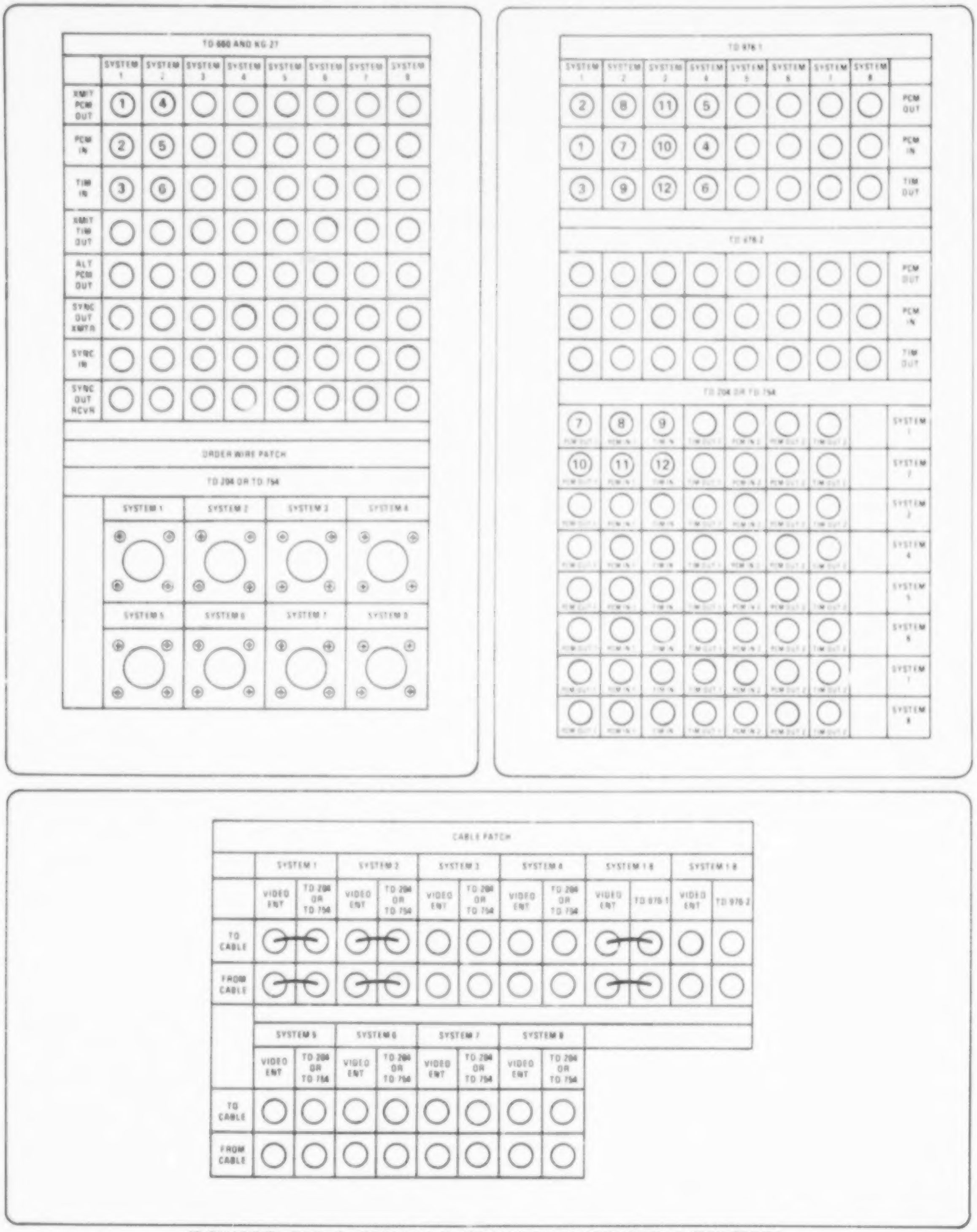
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD 976
PCM OUT
TIM IN
PCM IN
TD 660A
PCM OUT
TIM IN
PCM IN
PCM OUT
TIM IN
PCM IN
TD 660A
PCM OUT
TIM IN
PCM IN
CH 1-4
CH 5-8
CH 9-12
TD 754
TD 754
CH 1-4
CH 5-8
CH 9-12
TO CABLE
FM CABLE
TO CABLE
FM CABLE
CV 1548
CV 1548
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
VIDEO ENTRANCE BOX
SIGNAL ENTRANCE BOX

EL3TR178

NONSECURE 48-CHANNEL TERMINAL AN/TCC-73(V)1

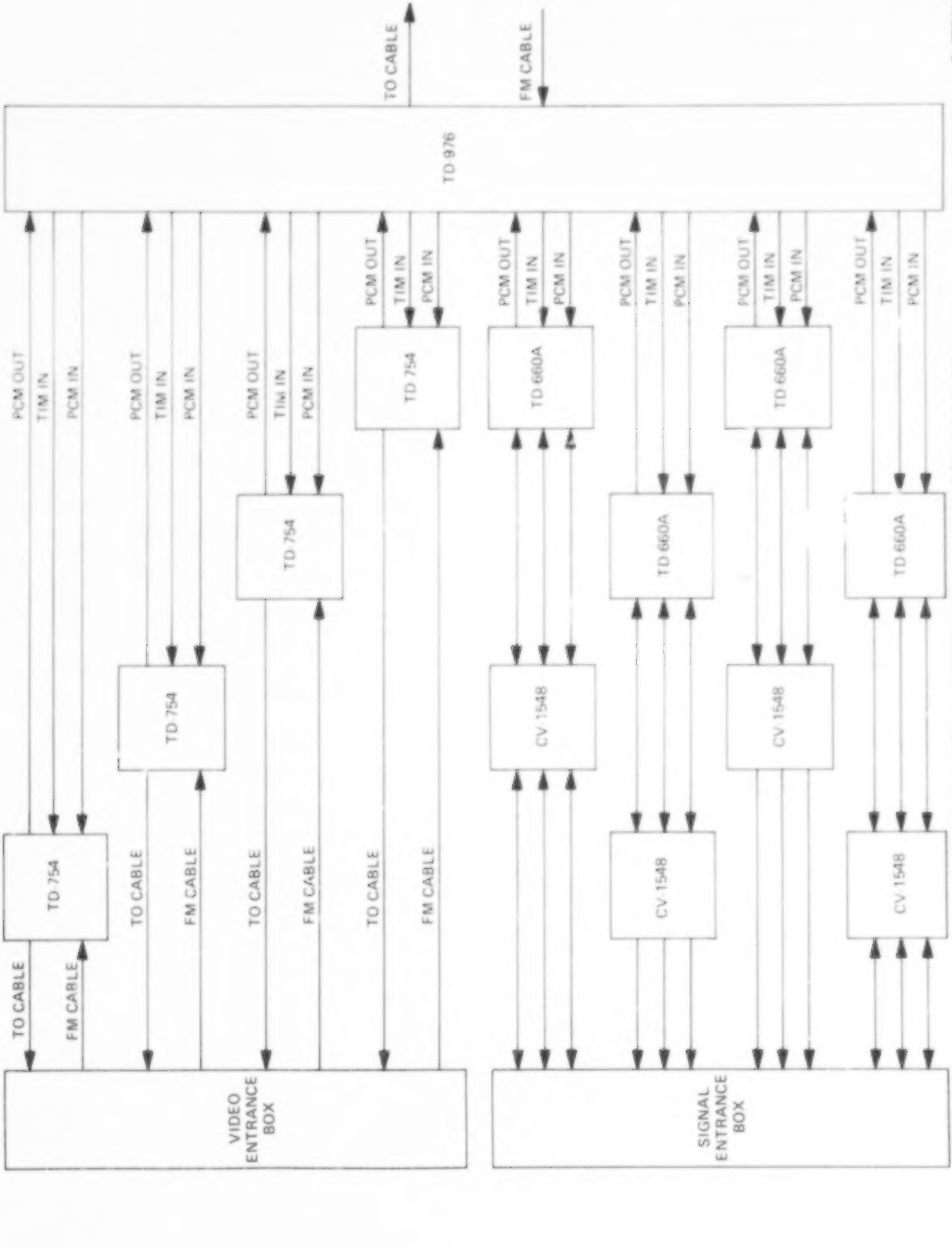
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976 1
PCM OUT
PCM IN
TIM OUT
1
2
3
4
5
6
7
8
9
10
11
12
TD 976 2
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
7
8
9
10
11
12
CABLE PATCH
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
SYSTEM 1-8
TO CABLE
FROM CABLE

48-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(V)1

EL3TR136

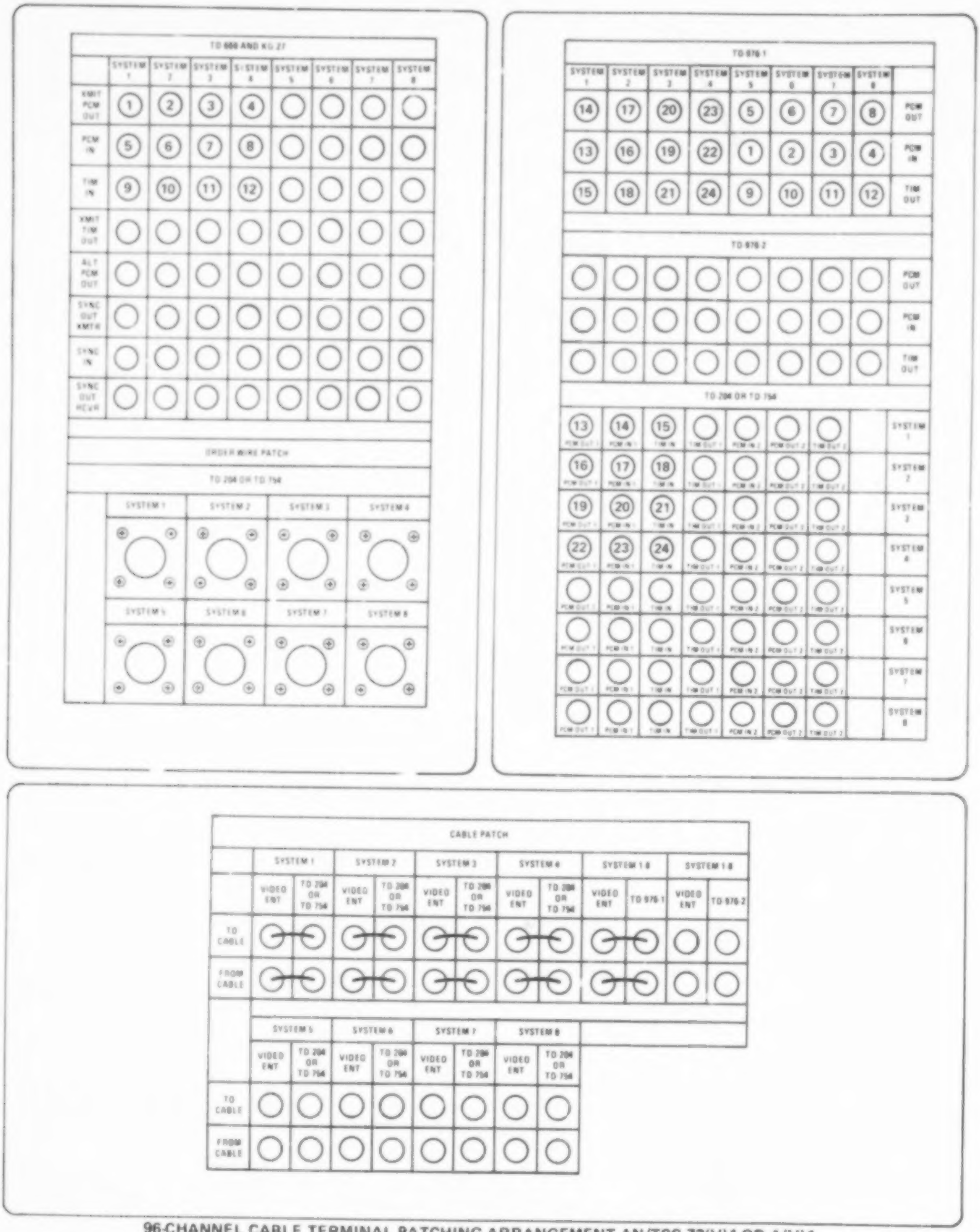
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD 976
PCM OUT
TIM IN
PCM IN
TD 754
TD 660A
CV 1548
VIDEO ENTRANCE BOX
SIGNAL ENTRANCE BOX

NONSECURE 96-CHANNEL TERMINAL AN/TCC-73(V)1 OR A(V)1

EL3TR171

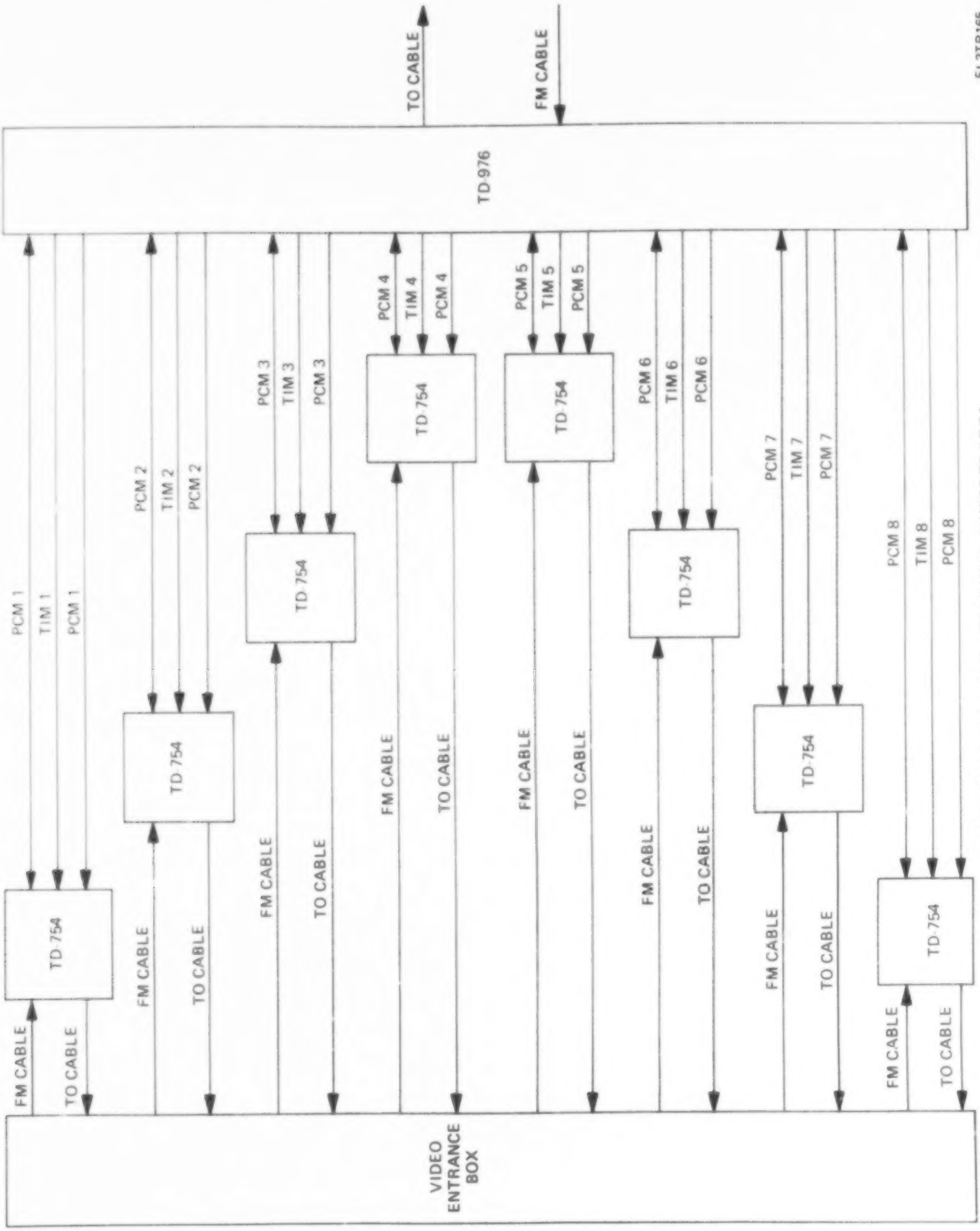
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976 1
PCM OUT
PCM IN
TIM OUT
TD 976 2
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
TO CABLE
FROM CABLE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

96-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(V)1 OR A(V)1

EL3TR135

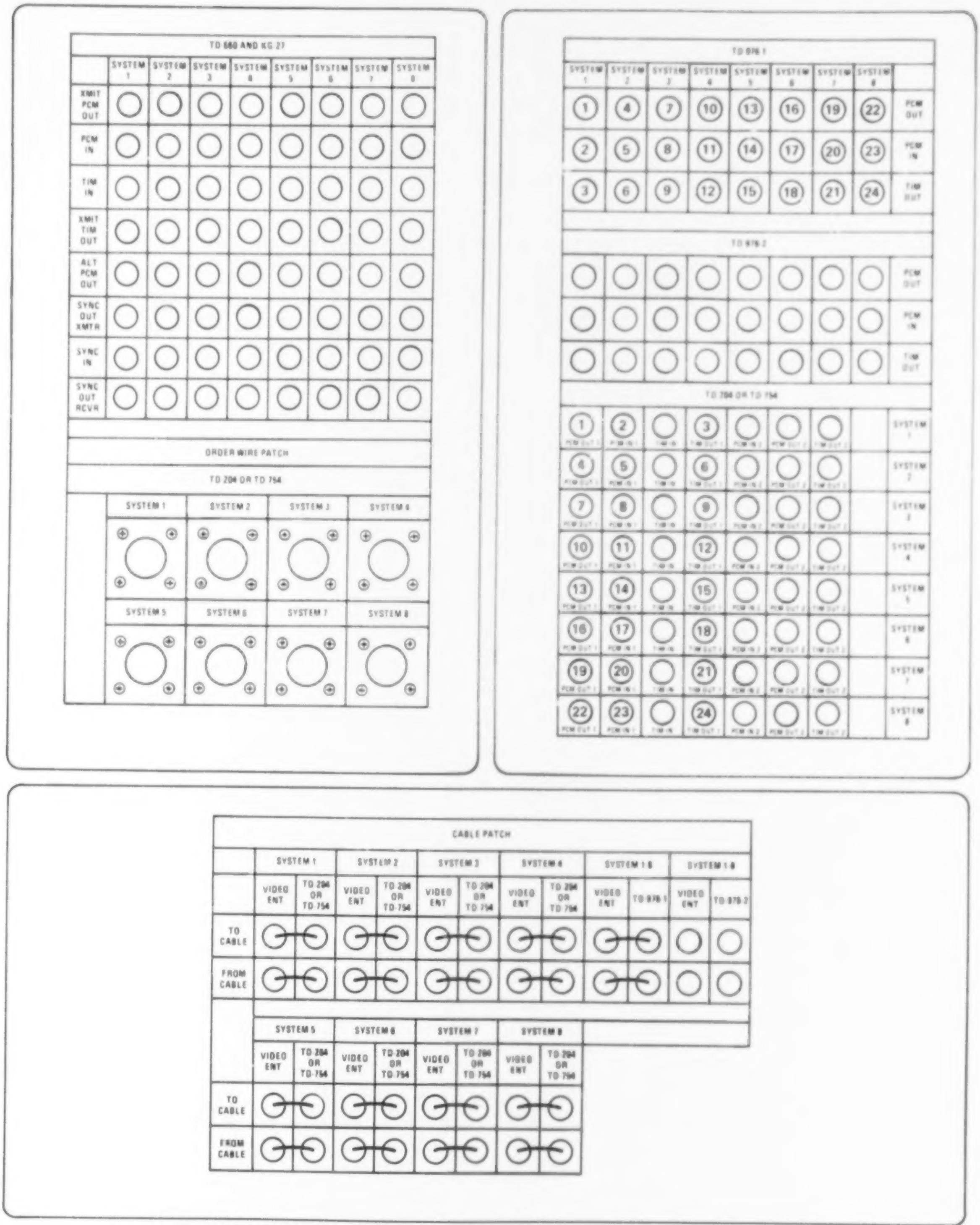
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-976
PCM 1
TIM 1
PCM 1
PCM 2
TIM 2
PCM 2
PCM 3
TIM 3
PCM 3
PCM 4
TIM 4
PCM 4
PCM 5
TIM 5
PCM 5
PCM 6
TIM 6
PCM 6
PCM 7
TIM 7
PCM 7
PCM 8
TIM 8
PCM 8
TD-754
TD-754
TD-754
TD-754
TD-754
TD-754
TD-754
TD-754
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
FM CABLE
TO CABLE
VIDEO
ENTRANCE
BOX

EL3TR165

NONSECURE 96-CHANNEL TERMINAL AN/TCC-73 A(V)1.

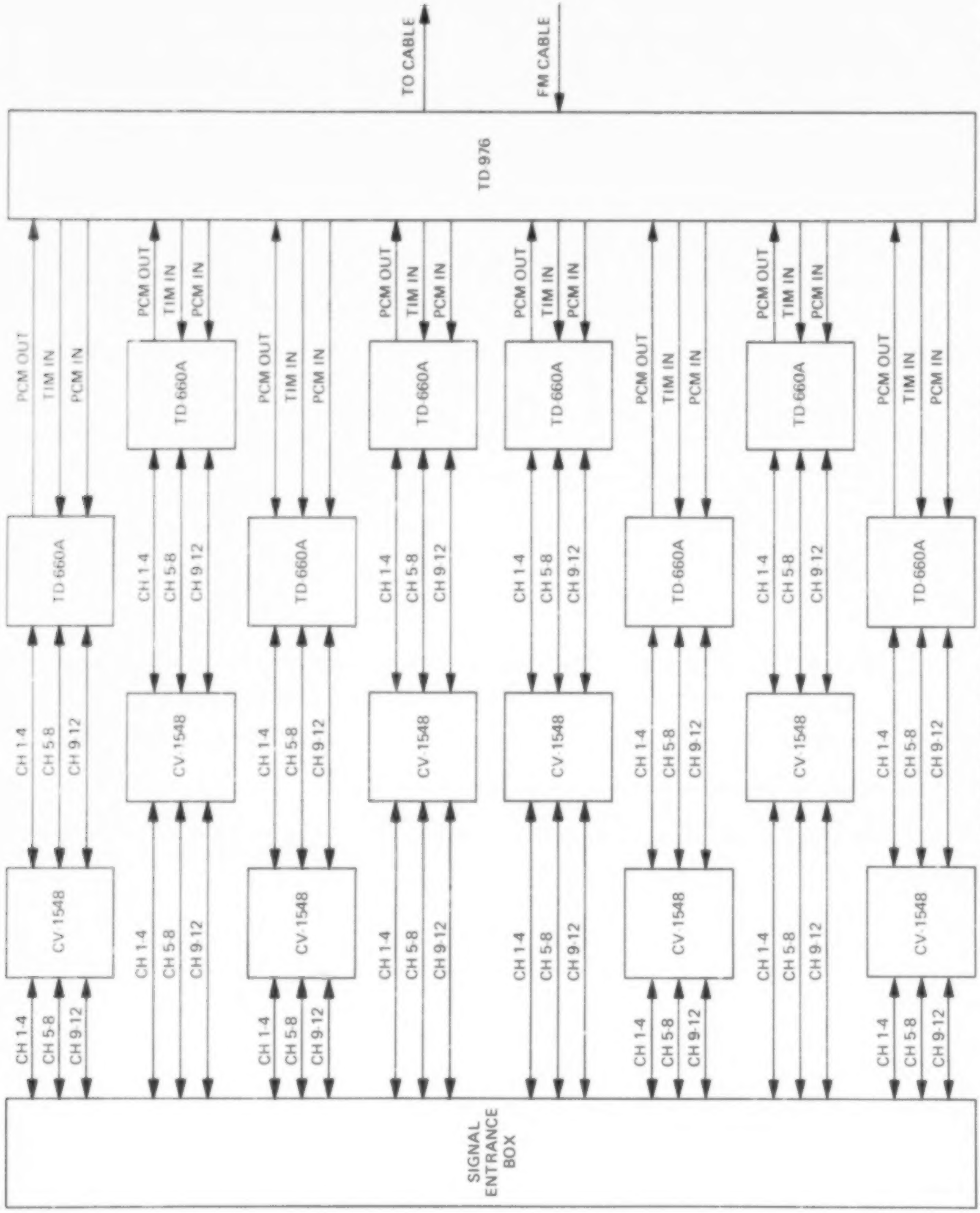
1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976 1
PCM OUT
PCM IN
TIM OUT
TD 976 2
TD 204 OR TD 754
CABLE PATCH
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
TO CABLE
FROM CABLE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

96-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73A(V)1

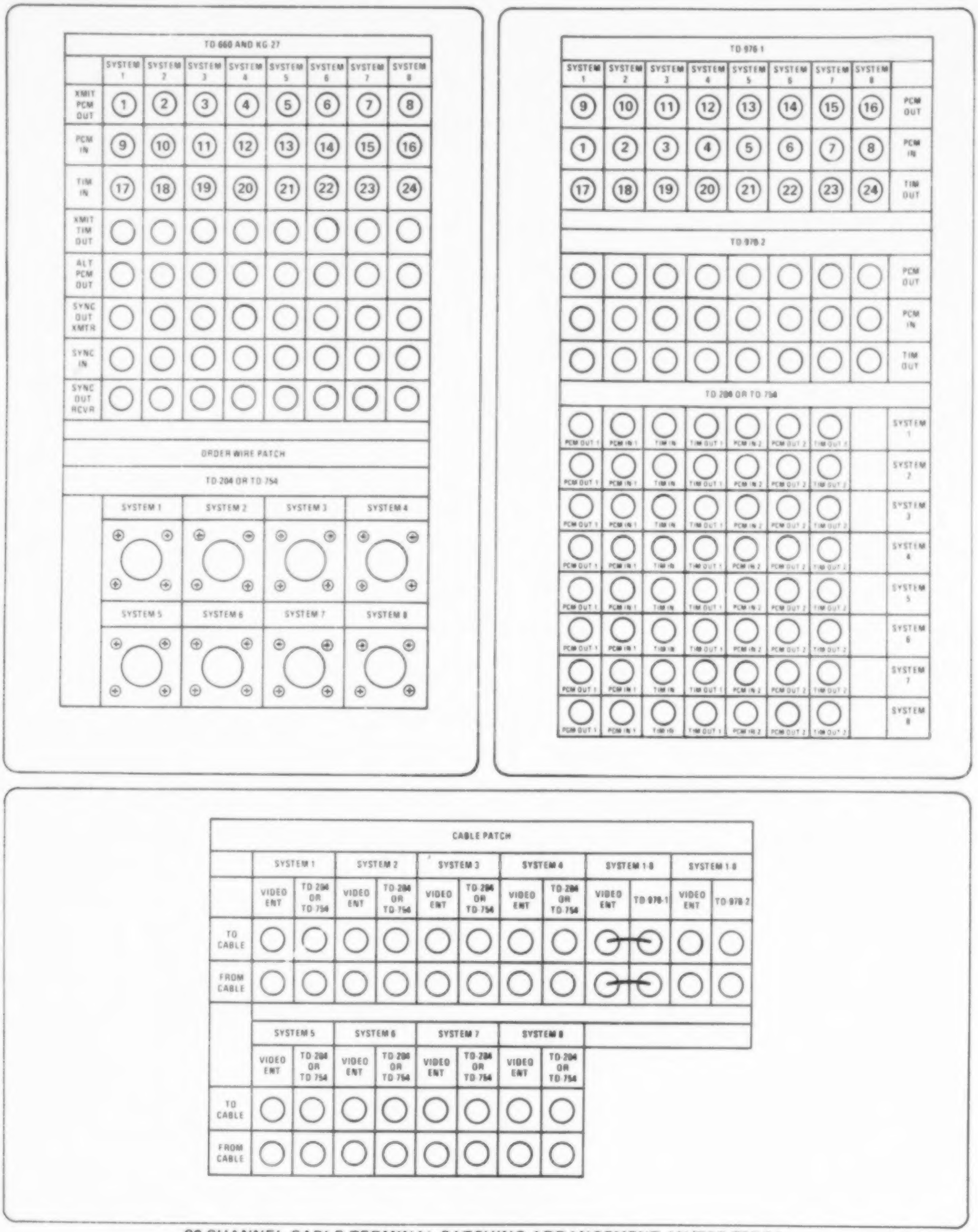
EL3TR134

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TO CABLE
FM CABLE
TD-976
PCM OUT
TIM IN
PCM IN
TD-660A
CV-1548
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
EL3TR009

NONSECURE 96-CHANNEL TERMINAL AN/TCC-73(V)1 OR A(V)1.

1-18. SYSTEMS BLOCK DIAGRAM PRESENTATION. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
1 2 3 4 5 6 7 8
PCM IN
9 10 11 12 13 14 15 16
TIM IN
17 18 19 20 21 22 23 24
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
ORDER WIRE PATCH
TD 204 OR TD 754
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
TD 976 1
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
9 10 11 12 13 14 15 16
PCM OUT
1 2 3 4 5 6 7 8
PCM IN
17 18 19 20 21 22 23 24
TIM OUT
TD 976 2
PCM OUT
PCM IN
TIM OUT
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
CABLE PATCH
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 1-8
SYSTEM 1-8
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-976-1
VIDEO ENT
TD-976-2
TO CABLE
FROM CABLE
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
VIDEO ENT
TD-204 OR TD 754
TO CABLE
FROM CABLE

96-CHANNEL CABLE TERMINAL PATCHING ARRANGEMENT AN/TCC-73(V)1

EL3TR142

CHAPTER 2

OPERATING INSTRUCTIONS

Subject	Section	Page
Description and Use of Operator's Controls and Indicators	I	2-1
Operator Preventive Maintenance Checks and Services (PMCS)	II	2-7
Operation Under Usual Conditions	III	2-9
Operation Under Unusual Conditions	IV	2-84

OVERVIEW

This chapter contains a detailed description of operator's control and indicators, the use of these controls at the operator level, preventive maintenance checks and services, and operation of equipment under both usual and unusual conditions.

Section I DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS

Subject	Para	Page
General	2-1	2-1
Power Distribution Panel	2-2	2-1
Power Indicator Lamp and Lighting Controls	2-3	2-4
Power Entrance Box	2-4	2-5
Exhaust Blower Controls	2-5	2-5
Signal Entrance Box	2-6	2-6

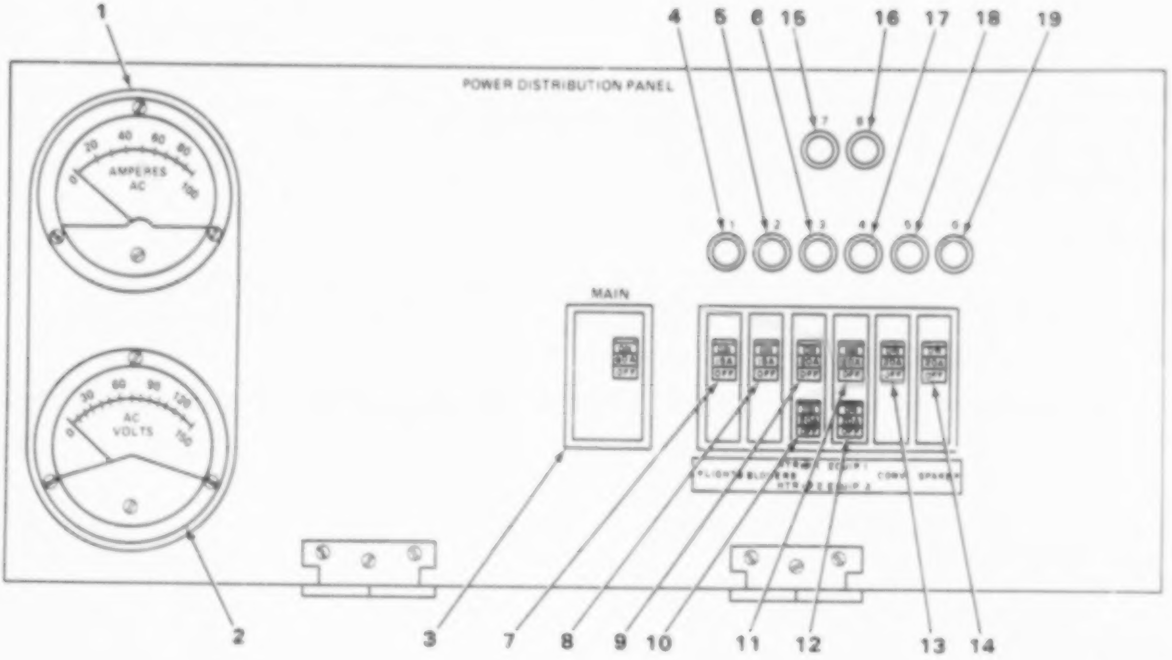
2-1. GENERAL.

Controls and indicators for the components of the AN/TCC-73(V)1, (V)2, A(V)1, and A(V)2 not described in this section are covered in the appropriate manuals listed in appendix A.

2-2. POWER DISTRIBUTION PANEL.

The power distribution panel consists of two meters: one for measuring current flow and one for measuring voltage input. It also consists of a MAIN circuit breaker for facility shutdown, and eight circuit breakers for individual circuit operation. Each circuit breaker has an associated indicator lamp for ON/OFF identification.

2-2. POWER DISTRIBUTION PANEL. (CONT)


1
4
5
6
15
16
17
18
19
POWER DISTRIBUTION PANEL
AMPERES AC
0
20
40
60
80
100
AC VOLTS
0
30
60
90
120
150
1
2
3
4
5
6
7
8
MAIN
LIGHTS
BLOWERS
COMM
SPARE
2
3
7
8
9
10
11
12
13
14

EL3TR013

1	AMPERES AC	Meter. Calibrated from 0-100 amps. Indicates the total current being used by all the electrical and electronic equipment in operation.
2	AC VOLTS	Meter. Calibrated from 0-150 volts ac. Indicates input voltage being received from the external power source.
3	MAIN	Circuit breaker. 60-amp circuit. Provides overload protection and control of ac power to the circuit breakers on the power distribution panel. Used for emergency shutdown of all other circuits.
4	INDICATOR 1	Glow lamp. Glows when LIGHTS circuit breaker is set to ON.
5	INDICATOR 2	Glow lamp. Glows when BLOWERS circuit breaker is set to ON.
6	INDICATOR 3	Glow lamp. Glows when HTR # 1 circuit breaker is set to ON.
7	LIGHTS	Circuit breaker. 15-amp circuit. Provides ac power to the fluorescent and incandescent ceiling lights.
8	BLOWERS	Circuit breaker. 15-amp circuit. Provides ac power to the BLOWER 1 and BLOWER 2 receptacle switches.

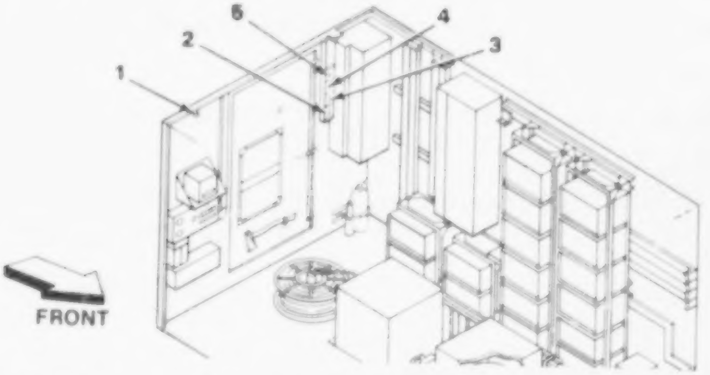
2-2. POWER DISTRIBUTION PANEL. (CONT)

9	HTR # 1	Circuit breaker. 20-amp circuit. Provides ac power to the No. 1 heater.
10	HTR # 2	Circuit breaker. 20-amp circuit. Provides ac power to the No. 2 heater.
11	EQUIP 1	Circuit breaker. 20-amp circuit. Provides ac power to system 1 thru 4 equipment rack receptacles.
12	EQUIP 2	Circuit breaker. 20-amp circuit. Provides ac power to system 5 thru 8 equipment rack receptacles.
13	CONV	Circuit breaker. 20-amp circuit. Provides ac power to the CONVENIENCE and INTERCOM receptacles.
14	SPARE	Circuit breaker. 15-amp circuit.
15	INDICATOR 7	Glow lamp. Glows when HTR # 2 circuit breaker is set to ON.
16	INDICATOR 8	Glow lamp. Glows when EQUIP 2 circuit breaker is set to ON.
17	INDICATOR 4	Glow lamp. Glows when EQUIP 1 circuit breaker is set to ON.
18	INDICATOR 5	Glow lamp. Glows when CONV circuit breaker is set to ON.
19	INDICATOR 6	Glow lamp. Glows when SPARE circuit breaker is set to ON.

NOTE

When SPARE circuit breaker is set to ON, indicator lamp 6 will glow even though SPARE circuit breaker is not connected to any equipment.

2-3. POWER INDICATOR LAMP AND LIGHTING CONTROLS.



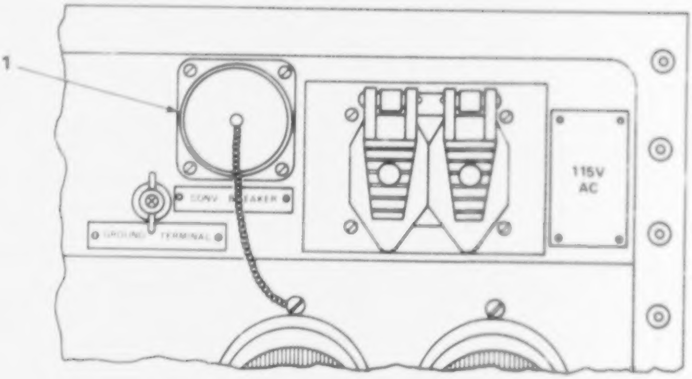
1	POWER INDICATOR LAMP	Neon lamp. Glows when ac power is applied to the power entrance box.

NOTE

Do not assume that power is shutdown because lamp is off. The power indicator lamp may be bad. Set MAIN circuit breaker on power distribution panel to ON. If ammeter indicates current being supplied to facility, shutdown external power and replace lamp.

2	INCANDESCENT COLD START	Switch. Controls incandescent ceiling lights on both sides of facility.
3	LIGHT 2	Switch. Controls curbside fluorescent ceiling lights (both rows).
4	LIGHT 1	Switch. Controls roadside fluorescent ceiling lights (both rows).
5	BYPASS-BLACKOUT	Switch. In BYPASS position, permits lights to be controlled by FLUORESCENT and INCANDESCENT COLD START light switches. In BLACKOUT position, lights are controlled by a microswitch in the door. When door is closed, lights remain on. When door is opened, lights go off.

2-4. POWER ENTRANCE BOX.

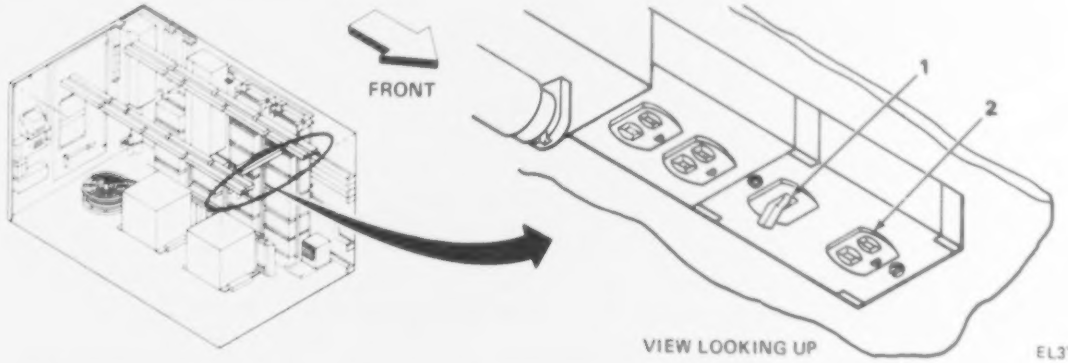

1
CONV BREAKER
GROUND TERMINAL
115V AC
EL3TR016

1	CONV BREAKER	Circuit breaker. Controls ac power to the 115 vac convenience receptacles in the power entrance box.

NOTE

Set circuit breaker to OFF and ground convenience receptacles before use.

2-5. EXHAUST BLOWER CONTROLS.


FRONT
1
2
VIEW LOOKING UP
EL3TR017

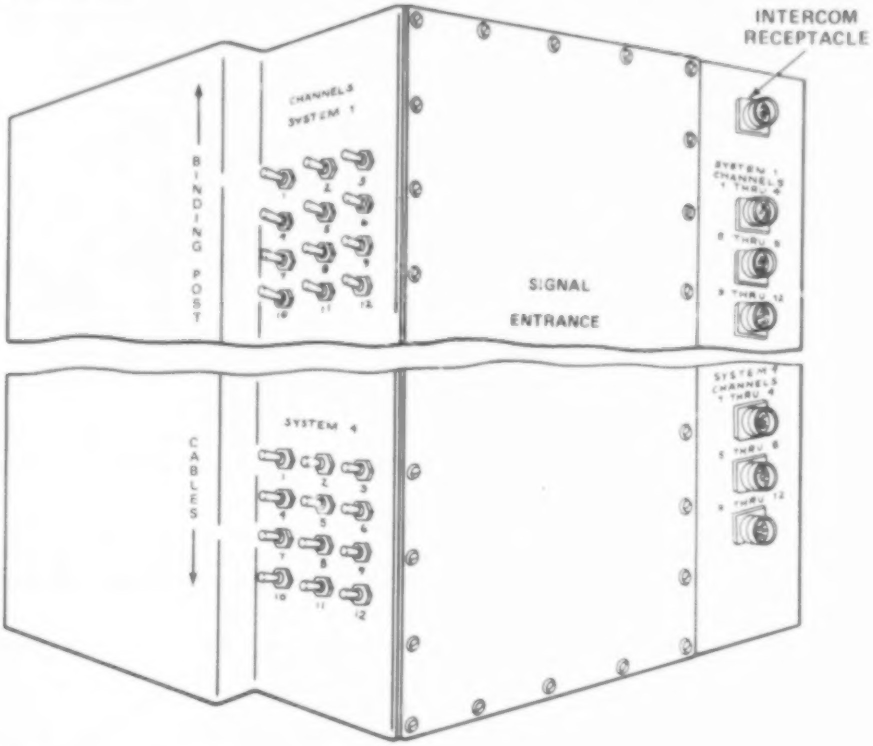
1	BLOWER SWITCH	Controls ac power to the blower motor.

NOTE

Before operating BLOWER 1 or BLOWER 2 switch, set BLOWERS circuit breaker located on power distribution panel to ON.

2	RECEPTACLE	Used to connect blowers to an ac power source. Power to receptacles is controlled by the blower switches.

2-6. SIGNAL ENTRANCE BOX.


INTERCOM RECEPTACLE
CHANNELS
SYSTEM 1
BINDING POST
CABLES
1
2
3
4
5
6
7
8
9
10
11
12
SYSTEM 4
SIGNAL
ENTRANCE
SYSTEM 1
CHANNELS
1 THRU 4
5 THRU 8
9 THRU 12
SYSTEM 4
CHANNELS
1 THRU 4
5 THRU 8
9 THRU 12
EL3TR143

BINDING POST/CABLES

Switches. There are 12 BINDING POST/CABLES switches in each system which control the incoming signal from either the external binding posts or the 26-pair cable connectors in the signal entrance panel. When a telephone circuit line connection is connected through the 26-pair cable, the associated channel BINDING POSTS/CABLES switch of the signal entrance panel must be set to CABLES. When a telephone circuit line is connected through the binding posts, the associated channel BINDING POSTS/CABLES switch on the signal entrance panel must be set to BINDING POSTS.

Section II OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

Subject	Para	Page
General	2-7	2-7
Operator Preventive Maintenance Checks and Services		2-8

2-7. GENERAL.

The Preventive Maintenance Checks and Services (PMCS) procedures are required to keep your equipment in good operating condition. They include (B) before operation and (W) weekly equipment checks.

Perform (W) weekly as well as (B) before operation PMCS if you are the assigned operator and have not operated the equipment since the last weekly check or you are operating the equipment for the first time.

If the equipment fails to operate, refer to the operator's troubleshooting procedures (chapter 3, section II) in this manual. Use TM 38-750 as a guide for reporting problems and using forms.

If the telephone terminal facility must be kept in service, check and service only the things that can be checked and serviced without disturbing operation. Make complete checks and services when equipment can be shutdown.

The EQUIPMENT IS NOT READY/AVAILABLE IF column tells you why your equipment cannot be used if the ITEM TO BE INSPECTED does not meet PROCEDURE needs.

Routine checks like equipment inventory, cleaning components, replacing items not in use, as well as checking for frayed cables, loose hardware, nuts, bolts, and screws, and corrosion on receptacles and connectors are not listed in the PMCS table. You should do these things as a matter of good preventive maintenance. If you find a routine check in the PMCS, it was listed because other operators reported problems with this item.

The ITEM NUMBER column in the PMCS table is to be used as a source of item numbers for the TM number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, for recording PMCS results.

NOTE

Always keep in mind the CAUTIONS and WARNINGS.

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B - BEFORE W - WEEKLY

ITEM NO.	INTERVAL		ITEM TO BE INSPECTED PROCEDURE:	EQUIPMENT IS NOT READY/AVAILABLE IF:
	B	W		
			OUTSIDE	
1	•	•	SHELTER. Check for skin punctures, cracks, or open seams that could permit moisture to enter the shelter and create a shock hazard.	Punctures, cracks, or open seams are present.
2	•		GROUNDING. Check grounding strap to make sure it is securely attached to the power entrance box ground terminal and grounding rod. Do the same for the signal entrance boxes.	Grounding strap is not properly connected.
			INSIDE	
3	•	•	CEILINGS, WALLS, AND FLOORS. Check for holes, cracks, open seams, signs of water seepage or leaks that may present a shock hazard.	Holes, cracks, open seams, or signs of water seepage are present.
4	*		Perform systems self-test (paragraph 2-24).	Equipment cannot be operated.

*Do this check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. The check does not need to be done again until redeployment.

Section III OPERATION UNDER USUAL CONDITIONS

Subject	Para	Page
System Planning	2-8	2-9
Site and Shelter Requirements	2-9	2-9
Service Upon Receipt of Materiel	2-10	2-9
Unpacking	2-11	2-10
Checking Unpacked Materiel	2-12	2-10
Unloading or Loading	2-13	2-11
Ladder Installation	2-14	2-12
Grounding Connection	2-15	2-12
Power Connections	2-16	2-14
Exhaust Blower Installation	2-17	2-16
Installation of Air Conditioner Hardware Kit	2-18	2-18
Signal Connections	2-19	2-19
Installing and Connecting Security Equipment TSEC/KG-27	2-20	2-22
Installing Data Buffer TD-1065/G	2-21	2-24
Installing Multiplexer TD-1069/G	2-22	2-27
Patch Panel Connections	2-23	2-27
Systems Self-Test	2-24	2-28
Initial Setup of Equipment	2-25	2-56
Circuit Alinement	2-26	2-69
Operating Procedures	2-27	2-72
Shutdown Procedures	2-28	2-82
Preparation for Movement	2-29	2-83

2-8. SYSTEM PLANNING.

The tactical situation and requirements determined by the system planner governs the use of the AN/TCC-73(*) (its equipment configuration) cabling connections to other terminals and field personnel. It is primarily a cable terminal but may be used with other equipment such as Radio Terminal Sets AN/TRC-112, AN/TRC-121, AN/TRC-110 and Radio Repeater Sets AN/TRC-110 and AN/TRC-138. The AN/TCC-73(*) may be utilized as a cable terminal, a cable repeater, or a combination of both. The Data Buffer TD-1065/G, Multiplexer TD-1069/G, or TSEC/KG-27 are additional authorized items. If the system capabilities provided by these components are required, requisition them through normal supply channels.

2-9. SITE AND SHELTER REQUIREMENTS.

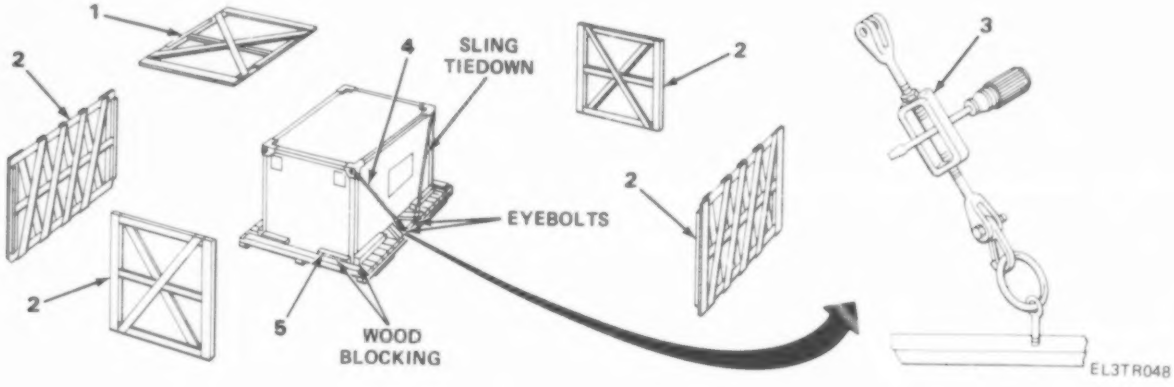
The best operating site for the facility is determined by the terrain, in conjunction with system planning and security considerations. When a site is chosen for the facility, the ground should be firm, dry, and have good drainage. After a site is prepared, the facility should be placed on leveled concrete blocks or wooden beams with access to all outside entrance boxes and exhaust blower ports. If a generator set is used to provide power, it should be located approximately 75 feet away from the facility to reduce fire hazard and generator noise interference. The dimensions of the crated terminal set are 144 × 93 × 94 in.

2-10. SERVICE UPON RECEIPT OF MATERIEL.

Upon receipt of the facility, it should be unpacked, and checked for possible damage during shipment.

2-11. UNPACKING.

The facility is packed in a reusable wooden crate.



WARNING

Don't go under facility when it is being lifted or personal injury may occur.

CAUTION

Be careful when using tools because the aluminum skin of the facility can be easily damaged.

NOTE

Remove all lag screws that secure top and side panels.

A prybar, two 15 ft, 1/2-in. ropes, and four technicians are required for this task.

1. Remove top (1) and side panels (2).
2. Using flat-tip screwdriver, turn four turnbuckles (3) to loosen.
3. Remove four sling assemblies (4).
4. Using prybar and hammer, remove wood blocking (5).

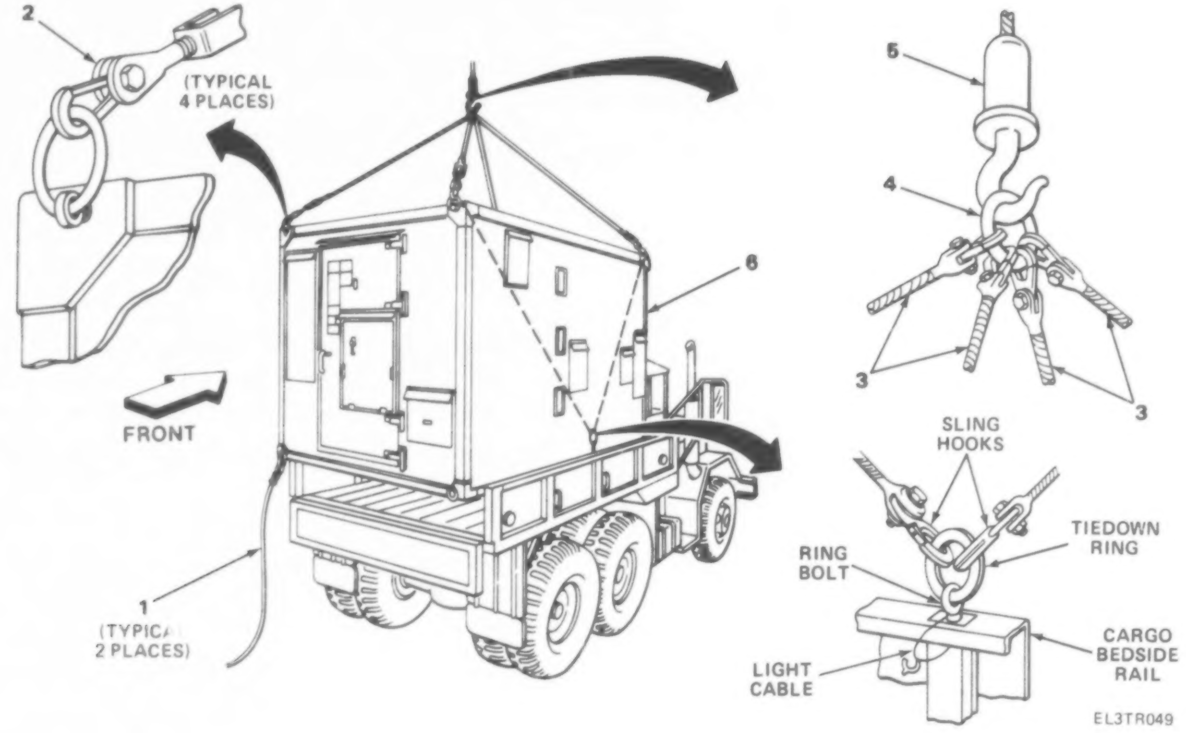
2-12. CHECKING UNPACKED MATERIEL.

Inspect the facility for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364 (Report of Discrepancy (ROD)).

Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with paragraph 1-2, Maintenance Forms, Records, and Reports.

Check to see whether the equipment has been modified.

2-13. UNLOADING OR LOADING.


2
(TYPICAL 4 PLACES)
FRONT
1
(TYPICAL 2 PLACES)
6
5
4
3
3
SLING HOOKS
TIEDOWN RING
RING BOLT
CARGO BEDSIDE RAIL
LIGHT CABLE
EL3TR049

The facility can be lifted by a crane with the existing sling assemblies. A forklift using entries cut into the base of the facility can also be used. Weight of the terminal set is 5,300 pounds.

NOTE

A crane, two 15 ft, 1/2-in. ropes, and four technicians are required for this task.

1. Tie two ropes (1) to towing eyes.
2. Install turnbuckle end of sling assemblies (2) to top lifting eyes.
3. Connect opposite turnbuckle ends (3) of sling assemblies (2) to lifting ring (4).
4. Hook lifting ring (4) with lifting hook (5).

WARNING

When lifting facility, all personnel should stay clear while it is being positioned or personal injury may occur.

5. Lift facility (6) from crate or base.
6. Using two ropes (1), guide facility (6) in place.

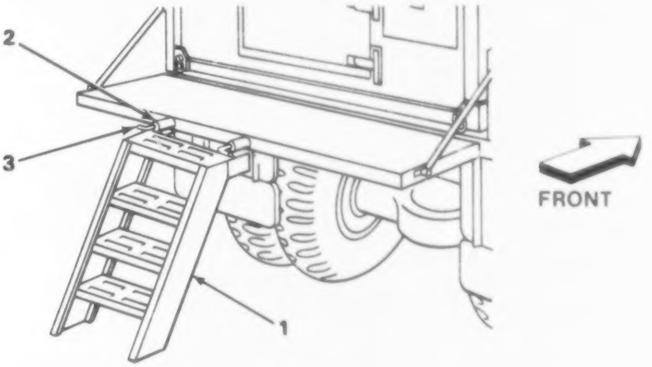
2-13. UNLOADING OR LOADING. (CONT)

NOTE

If facility is being positioned on truck, remove sling assemblies from lifting ring and secure sling assemblies to tiedown ring on truck.

7. Remove sling assemblies (2) and lifting ring (4), and store for future use.

2-14. LADDER INSTALLATION.



EL3TR052

NOTE

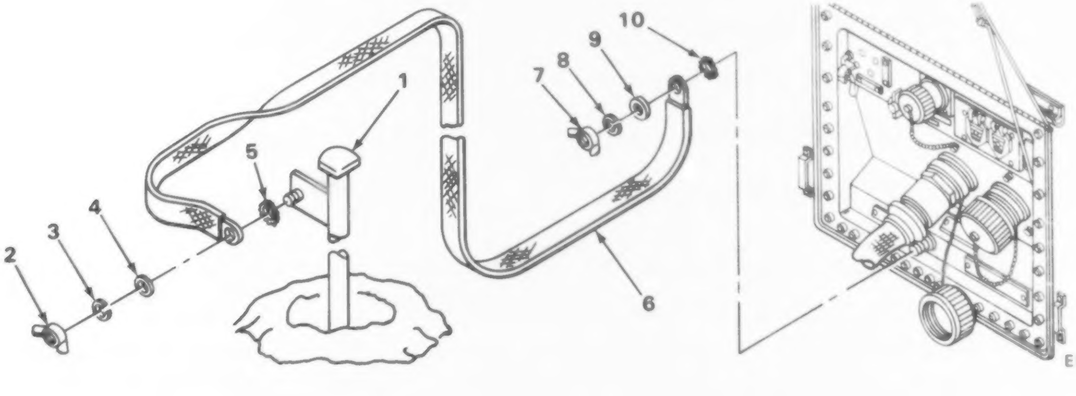
This procedure only applies if the facility is mounted on a truck.

Install ladder (1) in the latch receptacles (2) and lock latches (3).

WARNING

Check that ladder is securely locked in place. Injury to personnel may result if ladder is loose.

2-15. GROUNDING CONNECTION.



EL3TR053

2-15. GROUNDING CONNECTION. (CONT)

WARNING

The facility must be properly grounded or severe electrical shock may result.

NOTE

Ground rod must be placed within 6 feet of power entrance box.

1. Install grounding rod (1) next to shelter.

NOTE

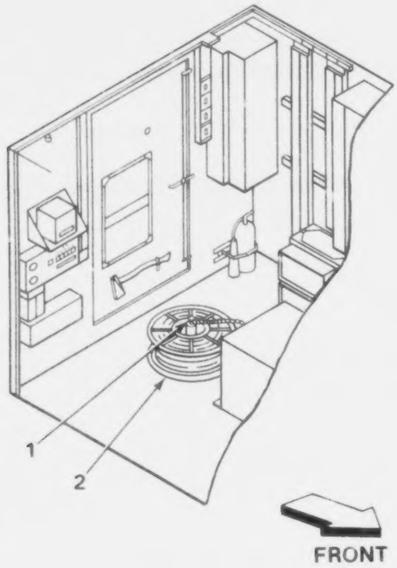
Scoop out a small hole approximately 6 inches deep at the selected grounding site. Using 8-lb sledge hammer, drive grounding rod into ground. Leave approximately 12 inches above ground.

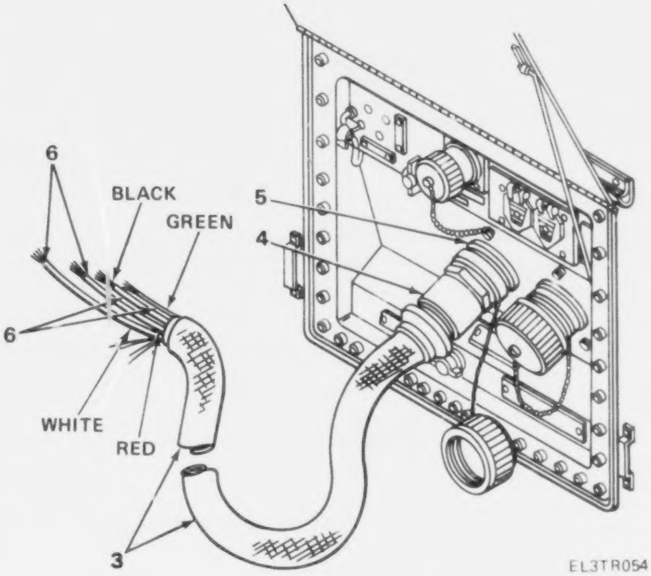
2. Remove wingnut (2), lockwasher (3), flat washer (4) and star washer (5) from ground rod (1).
3. Install ground strap (6), star washer (5), flat washer (4), lockwasher (3) and wingnut (2) on ground rod (1).
4. Remove wingnut (7), lockwasher (8), flat washer (9) and star washer (10) from power entrance box.
5. Install ground strap (6), star washer (10), flat washer (9), lockwasher (8), and wingnut (7) on power entrance box.

NOTE

When water is available, saturate the area around base of ground rod for a good ground to earth.

2-16. POWER CONNECTIONS.





NOTE

MAIN circuit breaker must be set to OFF, power entrance box must be open, ground rod must be installed (see para 2-15) and external power supply must be off.

Two technicians are required for these tasks.

CONNECTION TO SHELTER

WARNING

The facility must be grounded before connecting the power cables to the power entrance box. Failure to ground the facility can cause severe electrical shock.

1. Remove holddown bolt (1) and cable reel (2).
2. Remove power cable (3) from cable reel (2).
3. Connect power cable connector (4) to the power entrance box IN receptacle (5).

CONNECTION TO GENERATOR

Connect power cable lead terminals (6) to external power source.

NOTE

Refer to TM 5-6115-365-15 to aid in power connections to a generator set. Connect the power cable stub green (GND) lead to ground, the white (neutral) lead to the neutral terminal (L3). Connect the black (hot) lead to the hot terminal (L2). Add a jumper of 6 AWG or larger between the ground terminal and the trailer GND STUD. Remove the jumper when the power cable is disconnected.

CONNECTION TO CENTRAL POWER SOURCE

NOTE

For connection to central power source the red wire is not used.

1. If the power source is a 120-volt, 50- to 60-Hertz (Hz), single-phase, two-wire source,connect the green (ground) to ground, white (common) wire of the power cable stub to the common wire and the black (hot) wire of the power cable stub to the hot wire.

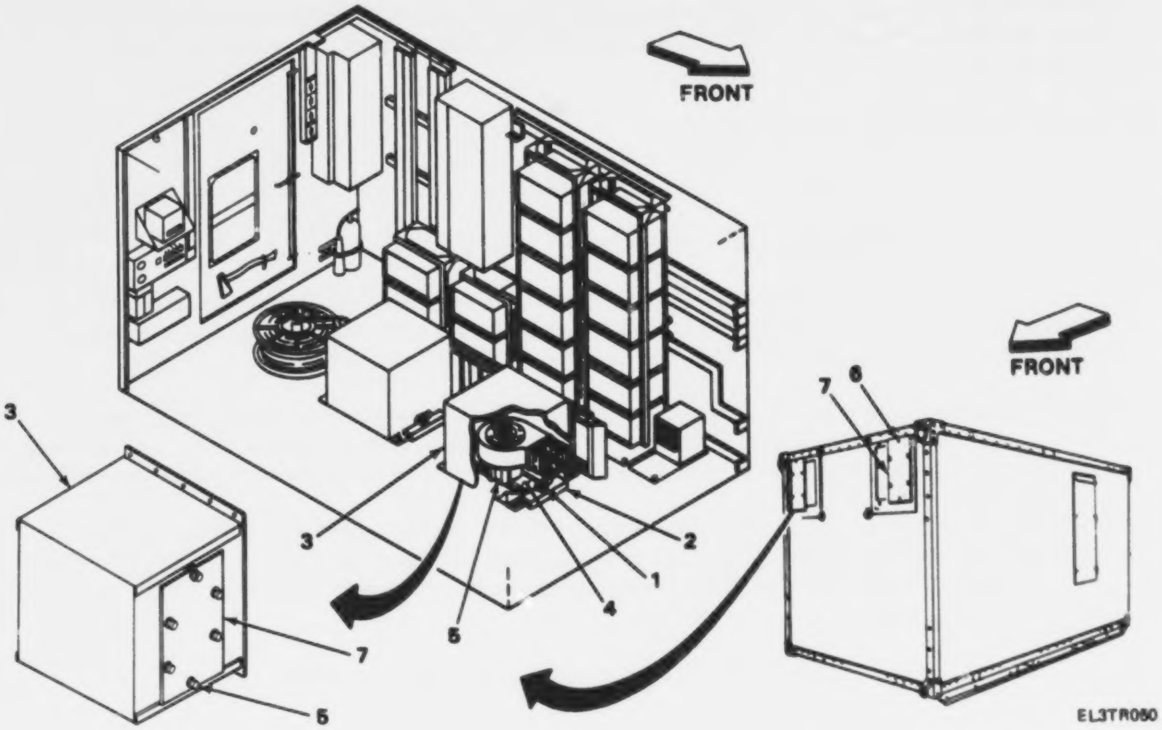
2. If the power source is a 110- to 120-volt, 50- to 60-Hz, single-phase or two-phase, three-wire distribution system, connect the green (ground) to ground, white (common) wire of the power cables stub to the common terminal and the black (hot) wire to either of the two hot terminals.

3. If the power source is a 110- to 220-volt, 50- to 60-Hz, three-phase, four-wire distribution system, connect the green (ground) to ground, white (common) wire of the power cable stub to the common bus bar, and the black (hot) wire of the power cable stub to the phase 1, phase 2, or phase 3 bus bar.

4. Connect the power cable stub to the end of the power cable assembly.

best copy available

2-17. EXHAUST BLOWER INSTALLATION.

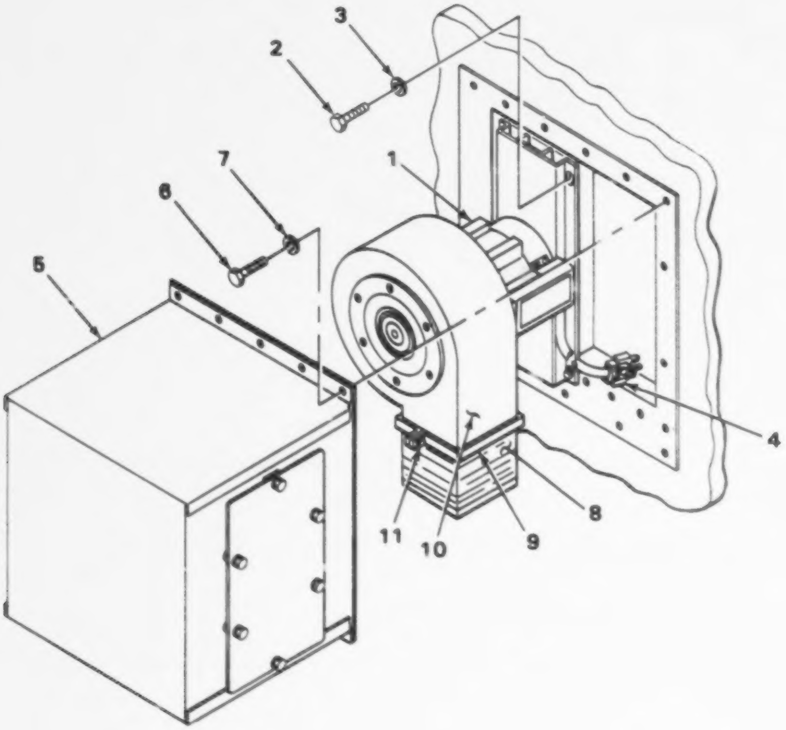


NOTE

There are two blower assemblies. The procedures are the same for both units.

1. Remove two holddown bolts (1) and brackets (2). Store for future use.
2. Remove blower box (3). Set by blower port.
3. Remove two holddown bolts (4).
4. Remove blower assembly (5). Set by blower port.
5. Remove six screws (6) and cover (7) from shelter.
6. Put cover (7) on blower box (3) and install six screws (6).

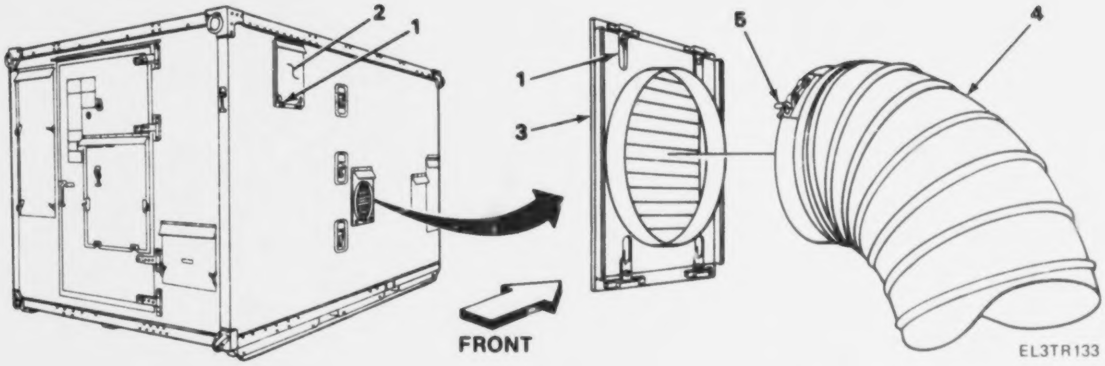
2-17. EXHAUST BLOWER INSTALLATION. (CONT)



EL3TR051

7. Put blower assembly (1) in place.
8. Install four screws (2) and lockwashers (3).
9. Put power cord (4) into port.
10. Put blower box (5) in place.
11. Install 10 screws (6) and lockwashers (7).
12. Pull duct (8) and clamp (9) up around blower duct (10).
13. Tighten screw (11).

2-18. INSTALLATION OF AIR CONDITIONER HARDWARE KIT.



NOTE

There are two air conditioner ducts on the curbside wall of the facility. Hardware kit installation procedures are the same for both ducts.

1. Open mounting latches (1) and remove duct cover (2).
2. Install hardware kit (3) and secure latches (1).
3. Slip air conditioning hose (4) over mounting rim or hardware kit (3) and tighten hose clamp (5).

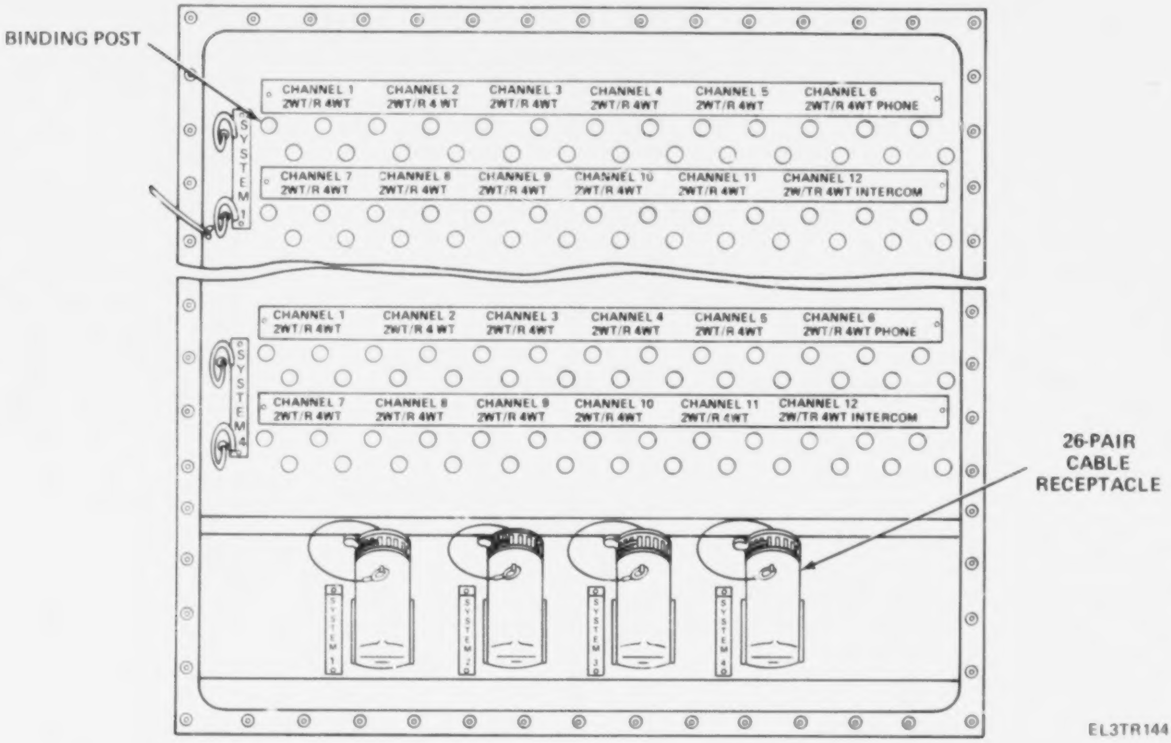
NOTE

Air conditioners and accessories are to he eliminated by attrition. As air conditioners fall or are turned in the accessories should be turned in per unit SOP and all hatches should be securely fastened. Pen and ink corrections should be made to Hand Receipt manuals until a change can be promulgated.

2-19. SIGNAL CONNECTIONS.

TELEPHONE CIRCUIT LINE CONNECTIONS

The telephone circuit line connections are made at the signal entrance boxes. The rear signal entrance box is shown below. The roadside box is the same except it contains systems 5 through 8. The systems are identified by nomenclature plates located on the left side of the signal entrance box. Each signal entrance box contains four electrical surge arrestors. These units protect the facility communication equipment from damage resulting from voltage spikes.


BINDING POST
SYSTEM 1
CHANNEL 1 2WT/R 4WT
CHANNEL 2 2WT/R 4 WT
CHANNEL 3 2WT/R 4WT
CHANNEL 4 2WT/R 4WT
CHANNEL 5 2WT/R 4WT
CHANNEL 6 2WT/R 4WT PHONE
CHANNEL 7 2WT/R 4WT
CHANNEL 8 2WT/R 4WT
CHANNEL 9 2WT/R 4WT
CHANNEL 10 2WT/R 4WT
CHANNEL 11 2WT/R 4WT
CHANNEL 12 2W/TR 4WT INTERCOM
SYSTEM 4
CHANNEL 1 2WT/R 4WT
CHANNEL 2 2WT/R 4 WT
CHANNEL 3 2WT/R 4WT
CHANNEL 4 2WT/R 4WT
CHANNEL 5 2WT/R 4WT
CHANNEL 6 2WT/R 4WT PHONE
CHANNEL 7 2WT/R 4WT
CHANNEL 8 2WT/R 4WT
CHANNEL 9 2WT/R 4WT
CHANNEL 10 2WT/R 4WT
CHANNEL 11 2WT/R 4WT
CHANNEL 12 2W/TR 4WT INTERCOM
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
26-PAIR CABLE RECEPTACLE
EL3TR144

The telephone connections may be made by using binding posts or 26-pair cable connectors, located at the bottom of the signal entrance box. The binding posts can be used for four-wire or two-wire field telephone connections.

FIELD WIRE CONNECTION

The 2WT/R binding posts are used to connect two-wire field telephones. When using a four-wire field telephone system, connect the receive pair of wires to the 2WT/R binding posts. The send pair of wires of the telephone system are connected to the 4WT binding posts of the same channel.

When a telephone circuit line is connected through the binding posts, the associated BINDING POSTS-CABLE switch must be set to BINDING POST.

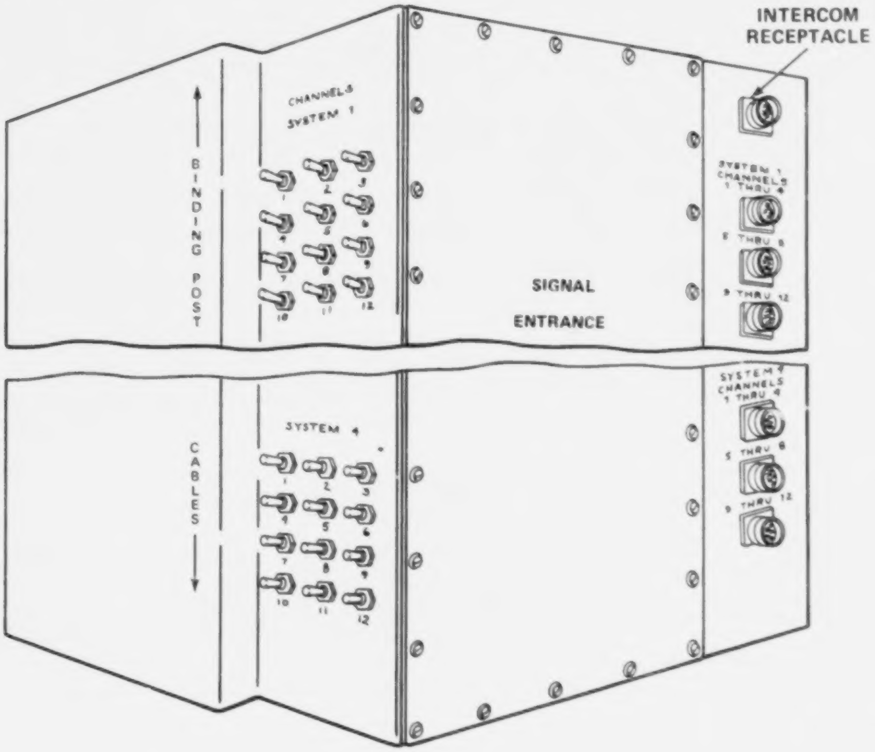
2-19. SIGNAL CONNECTIONS. (CONT)

26-PAIR CABLE CONNECTION

When using a 26-pair cable connector, unlock and remove the covers from the connector and the receptacle on the signal entrance box. Insert the connector into the receptacle and secure the lock collar.

NOTE

To avoid poor quality signals, do not connect more than six 26-pair cables together.


INTERCOM RECEPTACLE
CHANNELS
SYSTEM 1
BINDING POST
1
2
3
4
5
6
7
8
9
10
11
12
SIGNAL
ENTRANCE
SYSTEM 1
CHANNELS
1 THRU 4
5 THRU 8
9 THRU 12
SYSTEM 4
CABLES
1
2
3
4
5
6
7
8
9
10
11
12
SYSTEM 4
CHANNELS
1 THRU 4
5 THRU 8
9 THRU 12

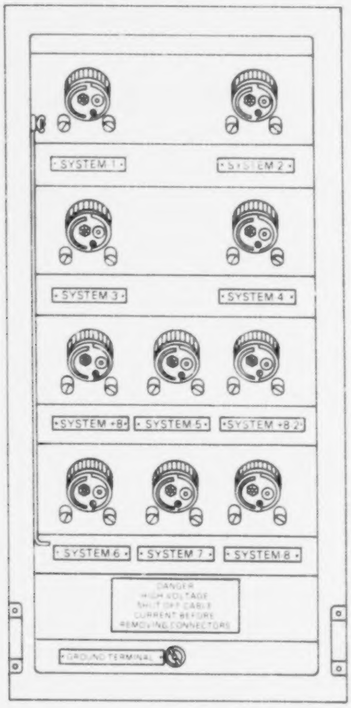
EL3TR143

When a telephone circuit line connection is connected through the 26-pair cable, the associated BINDING POSTS-CABLES switches must be set to CABLES.

2-19. SIGNAL CONNECTIONS. (CONT)

VIDEO ENTRANCE BOX CONNECTIONS

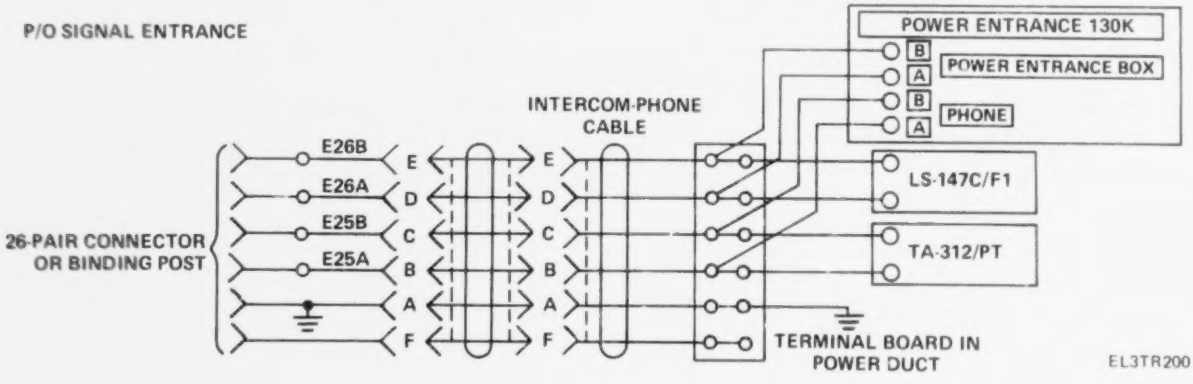
The video cable connections are determined by the system requirements. Connect the pcm cable to the required system connector in the video entrance box located on the front of the curbside wall.


SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM +8
SYSTEM 5
SYSTEM +8 2
SYSTEM 6
SYSTEM 7
SYSTEM 8
DANGER
HIGH VOLTAGE
SHUT OFF CABLE
CURRENT BEFORE
REMOVING CONNECTORS
GROUND TERMINAL

EL3TR198

LOCAL COMMUNICATION CONNECTIONS

The LS-147/FI and the TA-312/PT provide local facilities for the AN/TCC-73(*). Pair 25 of the 26-pair receptacles of the signal entrance panels are connected to the TA-312/PT inside the facility. Pair 26 of the 26-pair receptacles, and the INTERCOM binding posts of the power entrance box are connected to the LS-147C/FI in the facility. Connect the local communication facility as required.


P/O SIGNAL ENTRANCE
POWER ENTRANCE 130K
B
A
POWER ENTRANCE BOX
B
A
PHONE
INTERCOM-PHONE CABLE
E26B
E26A
E25B
E25A
E
D
C
B
A
F
E
D
C
B
A
F
26-PAIR CONNECTOR OR BINDING POST
LS-147C/F1
TA-312/PT
TERMINAL BOARD IN POWER DUCT

EL3TR200

2-20. INSTALLING AND CONNECTING SECURITY EQUIPMENT TSEC/KG-27.

The TSEC/KG-27 is required for secure operations but is not supplied with the facility. The AN/TCC-73(*) can provide secure link communications when TSEC/KG-27 equipment is interconnected to the system. Unkeyed equipment may be left unattended, provided it is protected sufficiently, in the judgment of the commander, to preclude any reasonable chance of theft, sabotage, tampering, or access by unauthorized persons. Refer to paragraphs 7-3 and 7-4 of (C) TB 380-41.

TSEC/KG-27 PREINSTALLATION PROCEDURES

1. Open the right-side permuter door (receiver) on the front panel by unscrewing the latch knob located on the front of the door.
2. Pull the tray lock lever out until the permuter tray is released, and remove the permuter tray from the holder.
3. Hold the permuter tray with the handle to the left so that the letters read from left to right.
4. Program the permuter using the stylus. Move each slider to the numerical position specified for the crypto period.
5. Insert the permuter tray into the permuter assembly. Swing the lock lever up until it just touches the zeroizing plunger near the top of the assembly.
6. Close and secure the permuter access door.
7. Repeat steps 1 through 6 for the transmit permuter.
8. For additional information pertaining to the TSEC/KG-27 preliminary check out and turn on procedures, refer to KAM-258( ) TSEC. For additional information on the permuter, refer to KAO-133( )/TSEC.

INSTALLATION AND CHECKOUT PROCEDURES

1. If the TD-660A/G and TD-754/G are connected for nonsecure operation, turn power switches to OFF and disconnect the cables between the two F components.

WARNING

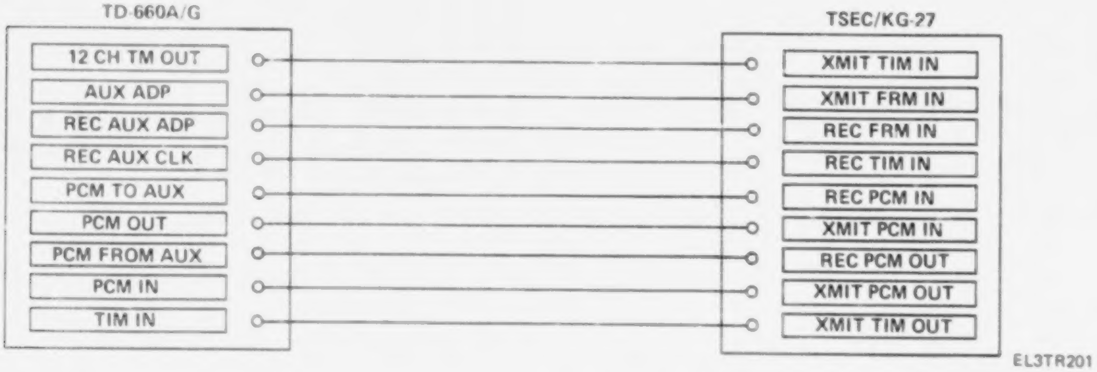
To prevent a TEMPEST hazard, disconnect Telephone Set TA-312/PT.

2-20. INSTALLING AND CONNECTING SECURITY EQUIPMENT TSEC/KG-27. (CONT)

2. Remove the six cables (five signal and one power) from the TSEC/KG-27 installation kit.

3. Set the TD-660A/G AUX IN-OUT switch to IN.

4. Connect cables for a loopback check as indicated below.


TD-660A/G
TSEC/KG-27
12 CH TM OUT
AUX ADP
REC AUX ADP
REC AUX CLK
PCM TO AUX
PCM OUT
PCM FROM AUX
PCM IN
TIM IN
XMIT TIM IN
XMIT FRM IN
REC FRM IN
REC TIM IN
REC PCM IN
XMIT PCM IN
REC PCM OUT
XMIT PCM OUT
XMIT TIM OUT
EL3TR201

5. Connect the power cable between the TSEC/KG-27 and the appropriate outlet.

6. Set the power switches of the TD-660A/G and the TSEC/KG-27 to ON.

7. Operate the TSEC/KG-27 MONITOR SELECT switch to all positions. The monitor lamp should light in all positions and no alarm condition should exist. The multiplexers should frame and no visible or audible alarm condition should exist. If performance is satisfactory, set the power switches of the TD-660A/G and the TSEC/KG-27 to OFF. Disconnect the cab line hookup and continue with the installation procedure.

8. Identify the end of each cable labeled TD-660A/G and TD-754/G. Connect the end of each cable to the proper connector.

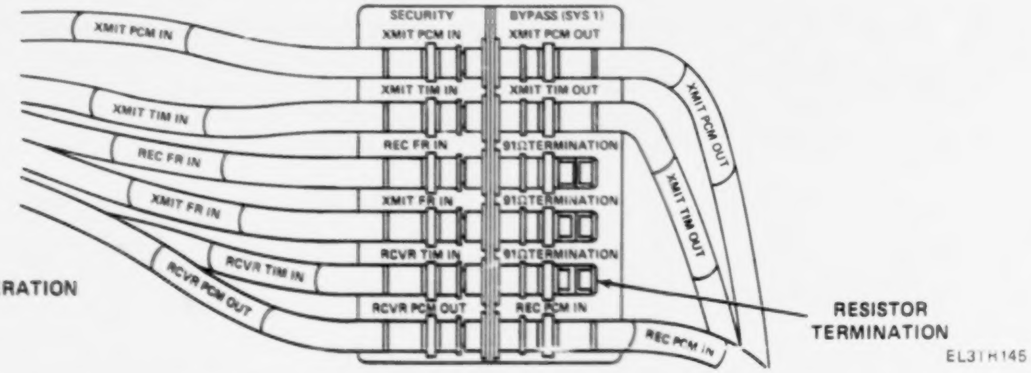
9. Route the free ends of the cables along the walls behind the equipment to the back of the TSEC/KG-27 equipment rack.

10. Remove the equipment shelf from its position and place it on the appropriate TSEC/KG-27 rack equipment shelf.

11. Slide the TSEC/KG-27 part way into the rack. Connect the free end of each cable to its correct connector on the rear of the TSEC/KG-27.

12. Disconnect the appropriate system PCM IN and PCM OUT, and TIM IN and TIM OUT cable connected to the SECURE BYPASS bracket on the front wall as illustrated. Connect these cables to their associated connectors on the rear of the TSEC/KG-27.

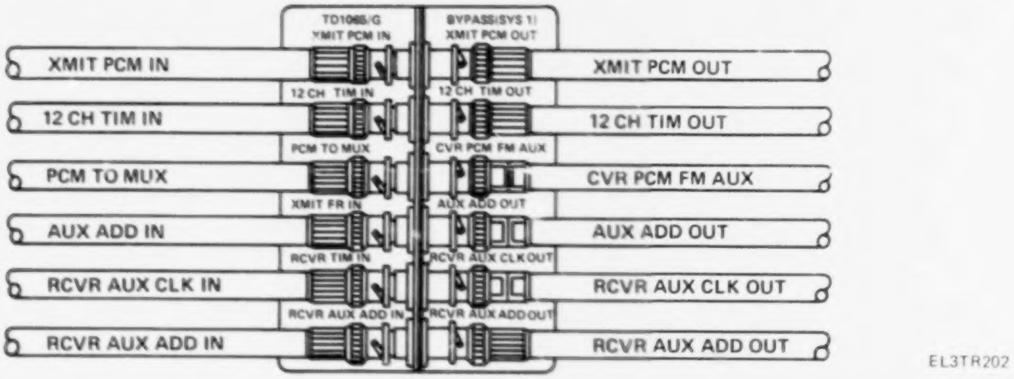
2-20. INSTALLING AND CONNECTING SECURITY EQUIPMENT TSEC/KG-27. (CONT)


XMIT PCM IN
XMIT TIM IN
REC FR IN
XMIT FR IN
RCVR TIM IN
RCVR PCM OUT
SECURITY
XMIT PCM IN
XMIT TIM IN
REC FR IN
XMIT FR IN
RCVR TIM IN
RCVR PCM OUT
BYPASS (SYS 1)
XMIT PCM OUT
XMIT TIM OUT
91Ω TERMINATION
91Ω TERMINATION
91Ω TERMINATION
REC PCM IN
XMIT PCM OUT
XMIT TIM OUT
REC PCM IN
RESISTOR TERMINATION
EL3TR145

BYPASS OPERATION

13. Connect the power cable between the TSEC/KG-27 and its power outlet.
14. Push the TSEC/KG-27 in rack alining mounting brackets with holes, and install mounting hardware.

2-21. INSTALLING DATA BUFFER TD-1065/G.


TD1065/G
XMIT PCM IN
12 CH TIM IN
PCM TO MUX
XMIT FR IN
RCVR TIM IN
RCVR AUX ADD IN
BYPASS(SYS 1)
XMIT PCM OUT
12 CH TIM OUT
CVR PCM FM AUX
AUX ADD OUT
RCVR AUX CLK OUT
RCVR AUX ADD OUT
XMIT PCM IN
12 CH TIM IN
PCM TO MUX
AUX ADD IN
RCVR AUX CLK IN
RCVR AUX ADD IN
XMIT PCM OUT
12 CH TIM OUT
CVR PCM FM AUX
AUX ADD OUT
RCVR AUX CLK OUT
RCVR AUX ADD OUT
EL3TR202

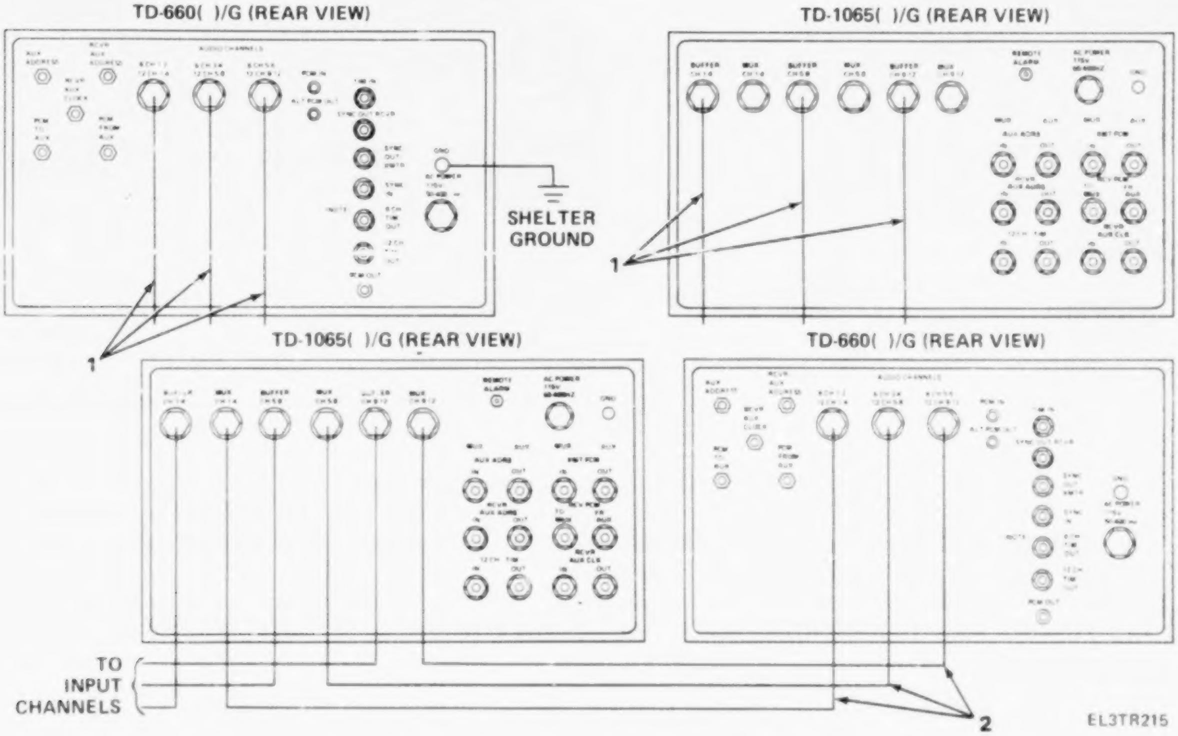
When the TD-1065/G is used with TD-660(*)/G, it provides for access of data to any channel of the 6- or 12-channel signal developed by the TD-660(*)/G.

NOTE

All interconnecting cables are supplied with the shelter.

1. Remove all cables from associated TD-1065/G bypass brackets.

2-21. INSTALLING DATA BUFFER TD-1065. (CONT)


TD-660( )/G (REAR VIEW)
TD-1065( )/G (REAR VIEW)
SHELTER
GROUND
1
1
TD-1065( )/G (REAR VIEW)
TD-660( )/G (REAR VIEW)
TO
INPUT
CHANNELS
2
EL3TR215

2. Remove the three audio cables (1) from AUDIO CHANNELS 1-4, 5-8, and 9-12 on the TD-660(*)/G.

3. Remove equipment shelf (located under table) from position and place on the appropriate TD-1065/G equipment rack shelf.

4. Slide the TD-1065/G part way into rack.

NOTE

Step 5 applies to systems 3 through 8.

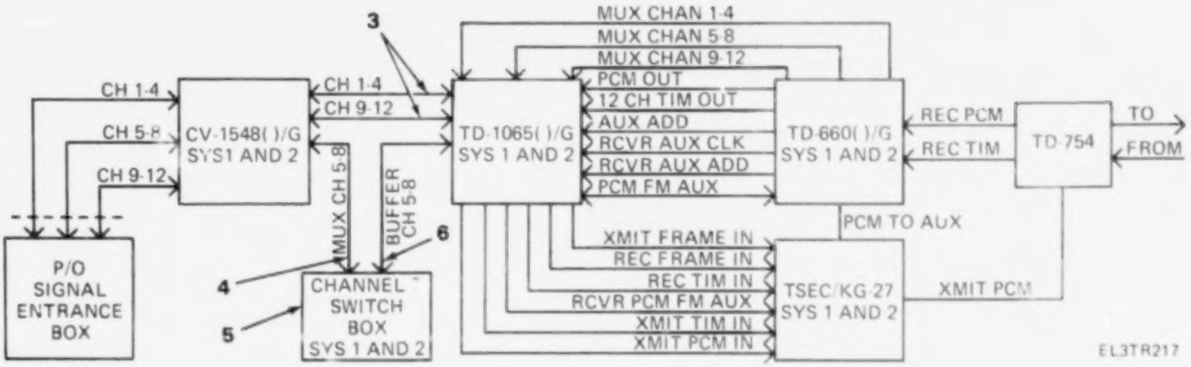
5. Connect the three audio cables (1) removed in step 2 to their associated buffer connectors on the TD-1065/G as tagged.

6. Connect the three audio cables (2) that are supplied and attached to the associated TD-1065/G equipment shelf to the TD-1065 MUX channels as tagged.

7. Connect the opposite end of the three audio cables (2) connected to TD-1065/G in step 6 to AUDIO CHANNELS of the TD-660(*)/G as tagged.

8. Connect the cables removed from the bypass bracket in step 1 to the associated connectors on the rear of TD-1065/G as tagged.

2-21. INSTALLING DATA BUFFER TD-1065/G. (CONT)

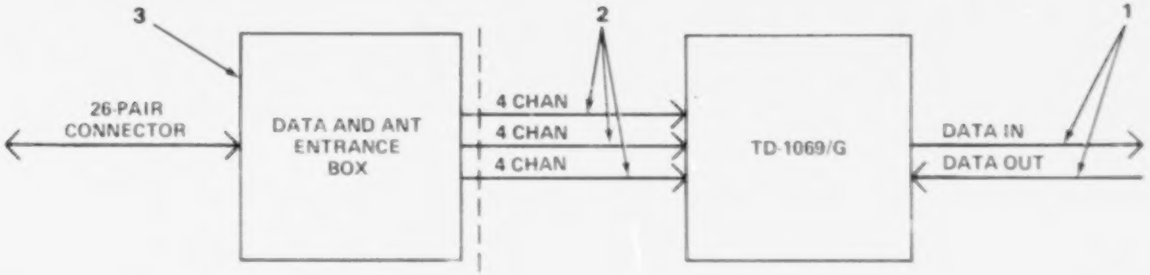

MUX CHAN 1-4
MUX CHAN 5-8
MUX CHAN 9-12
3
CH 1-4
CH 5-8
CH 9-12
CV-1548( )/G SYS1 AND 2
CH 1-4
CH 9-12
MUX CH 5-8
BUFFER CH 5-8
6
TD-1065( )/G SYS 1 AND 2
PCM OUT
12 CH TIM OUT
AUX ADD
RCVR AUX CLK
RCVR AUX ADD
PCM FM AUX
TD-660( )/G SYS 1 AND 2
REC PCM
REC TIM
TD-754
TO
FROM
PCM TO AUX
XMIT FRAME IN
REC FRAME IN
REC TIM IN
RCVR PCM FM AUX
XMIT TIM IN
XMIT PCM IN
TSEC/KG-27 SYS 1 AND 2
XMIT PCM
P/O SIGNAL ENTRANCE BOX
4
5
CHANNEL SWITCH BOX SYS 1 AND 2
EL3TR217

NOTE

Steps 9 thru 11 only apply to systems 1 and 2.

9. Connect two of the three audio cables (3) (CH 1-4 and CH 9-12) removed in step 2 to TD-1065/G BUFFER CH 1-4 and 9-12 as tagged.
10. Connect the third audio cable (4) (CH 5-8) removed in step 2 to the switch box (5) as tagged.
11. Connect the audio cable (6) coming from the switch box (5) to the TD-1065/G as tagged.
12. Connect the power cable to the TD-1065/G.
13. Push the TD-1065/G in rack alining mounting brackets with holes, and install mounting hardware.

2-22. INSTALLING MULTIPLEXER TD-1069/G.



EL3TR218

The following installation applies to TD-1069/G systems 1 and 2.

NOTE

Removal of TD-754/G systems 7 and 8 is required to install TD-1069/G systems 1 and 2. Interconnecting cables are already supplied with shelter.

1. Remove the equipment shelf (located under table) from position and place on the appropriate TD-1069/G equipment rack shelf.
2. Remove the mounting brackets and hardware from the TD-754/G.
3. Pull the TD-754/G part way out of the equipment shelf. Disconnect all cables and remove the TD-754/G.
4. Put the TD-1069/G onto the equipment shelf and connect the two twinax cables (1) as tagged.
5. Connect the three data cables (2) from the data entrance box (3) to the TD-1069/G as tagged.
6. Connect the power cable to the TD-1069/G.
7. Push the TD-1069/G into the rack and install mounting brackets and hardware.

2-23. PATCH PANEL CONNECTIONS.

The AN/TCC-73(*) may be arranged to provide cable terminal or cable repeater facilities. Determine the application requirements and make the appropriate patch panel connections as indicated on the patching arrangement illustrations given in chapter 1, section III.

2-24. SYSTEMS SELF-TEST.

Prior to making a systems self-test of equipment, all components of the system application are installed and all cables connected. If additional authorized components are not installed in the facility, the operational check will consist of only those components installed. The systems self-test procedures are used to check the operational status of the shelter facility. These procedures must be performed prior to deployment of the facility to a field location, and before initial setup of the facility components for the system configuration.

Perform the self-test procedures for systems 1 and 2 of each component.

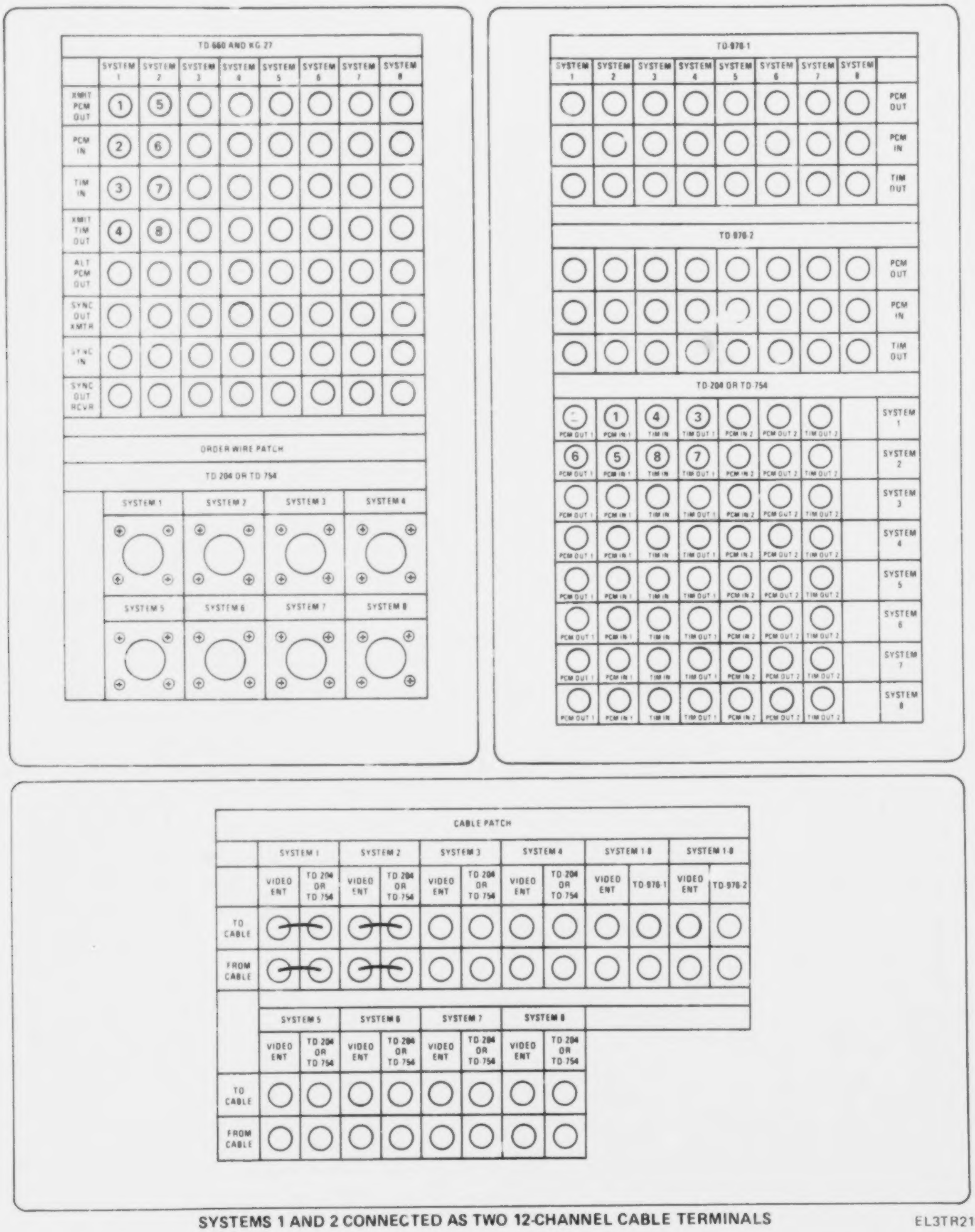
The self-test procedures can be used for troubleshooting each component. When troubleshooting, perform both portions of the self-test procedures for the TD-660(*)/G and TD-204/U or TD-754/G. Once a problem has been isolated to a component and the problem is corrected, restore the component back into the operating mode.

Make the following patch panel cable connections using patch cords (see page 2-27).

TD-660/TD-1065 SYS 1	to	TD-204/754 SYS 1
PCM OUT		PCM IN
PCM IN		PCM OUT
TIM OUT		TIM IN
TIM IN		TIM OUT
TD-660/TD-1065 SYS 2	to	TD-204/754 SYS 2
PCM OUT		PCM IN
PCM IN		PCM OUT
TIM OUT		TIM IN
TIM IN		TIM OUT
TD-204/754 SYS 1	to	VID ENT BOX SYS-1
TO CABLE		TO CABLE
FROM CABLE		FROM CABLE
TD-204/754 SYS-2		VID ENT BOX SYS-2
TO CABLE		TO CABLE
FROM CABLE		FROM CABLE

Interconnect system 1 and system 2 video connectors at video entrance box using 1/4-mile of cable assembly CX-11230/G.

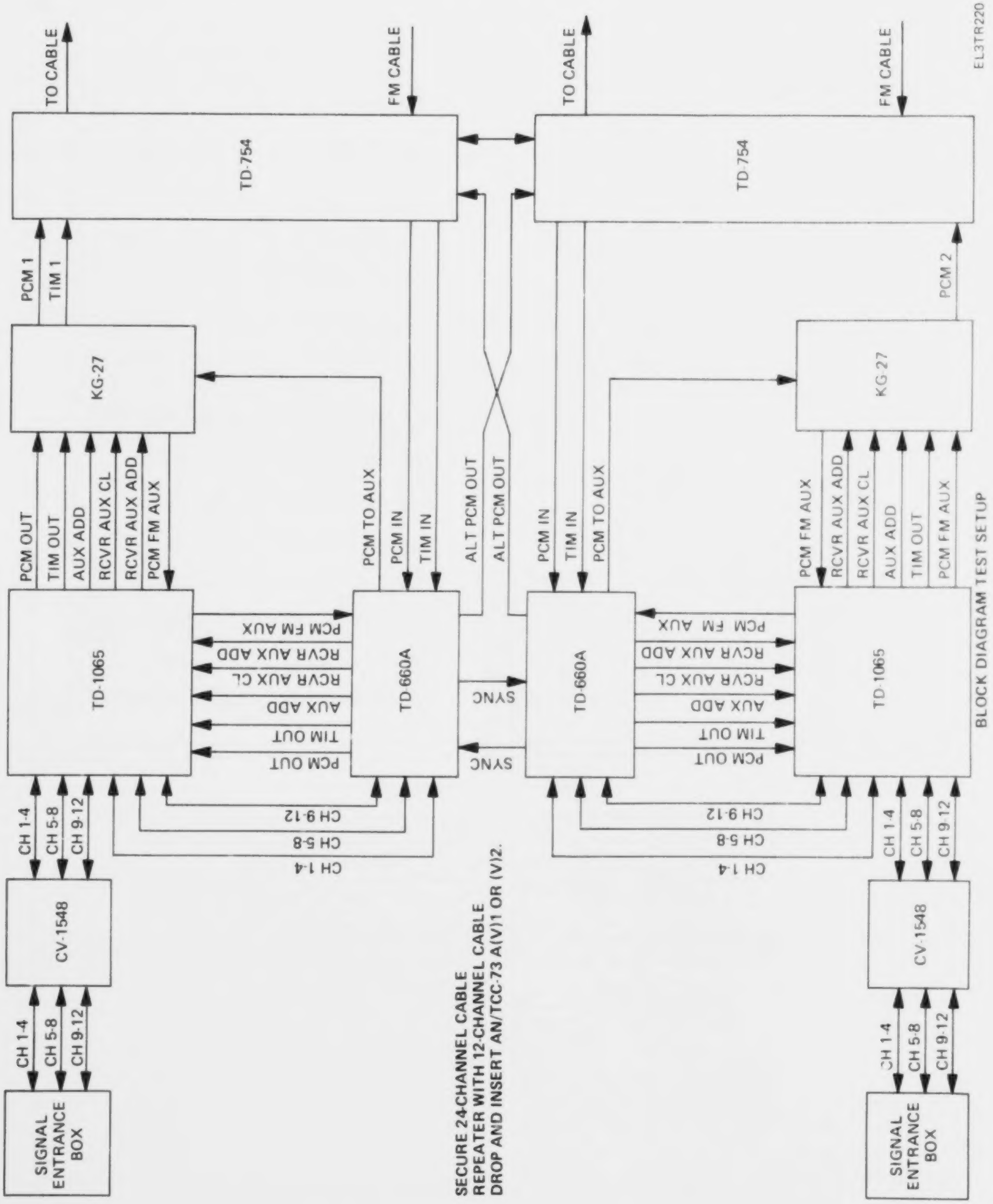
2-24. SYSTEMS SELF-TEST. (CONT)


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
8
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976-1
PCM OUT
PCM IN
TIM OUT
TD 976-2
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976-1
TD 976-2
TO CABLE
FROM CABLE

SYSTEMS 1 AND 2 CONNECTED AS TWO 12-CHANNEL CABLE TERMINALS

EL3TR219

2-24. SYSTEMS SELF-TEST. (CONT)

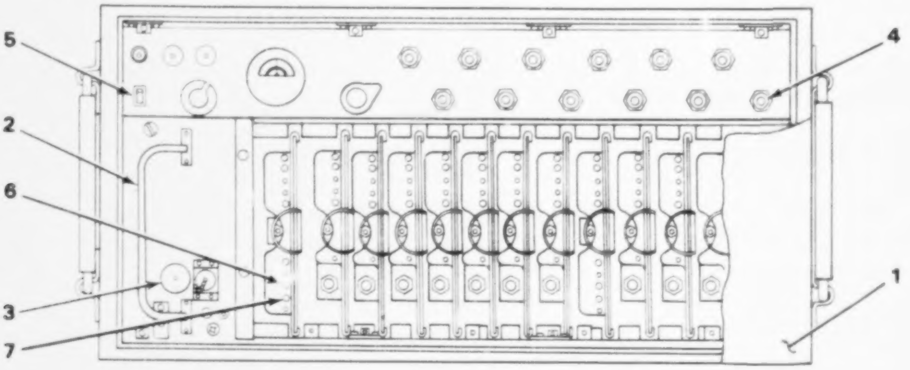

TO CABLE
FM CABLE
TO CABLE
FM CABLE
EL3TR220
TD-754
TD-754
PCM 1
TIM 1
PCM 2
KG-27
KG-27
PCM OUT
TIM OUT
AUX ADD
RCVR AUX CL
RCVR AUX ADD
PCM FM AUX
PCM TO AUX
PCM IN
TIM IN
ALT PCM OUT
ALT PCM OUT
PCM IN
TIM IN
PCM TO AUX
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM FM AUX
TD-1065
TD-660A
SYNC
SYNC
TD-660A
TD-1065
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
PCM FM AUX
RCVR AUX ADD
RCVR AUX CL
AUX ADD
TIM OUT
PCM OUT
CH 1-4
CH 5-8
CH 9-12
CH 9-12
CH 5-8
CH 1-4
CH 9-12
CH 5-8
CH 1-4
CH 1-4
CH 5-8
CH 9-12
CV-1548
CV-1548
CH 1-4
CH 5-8
CH 9-12
CH 1-4
CH 5-8
CH 9-12
SIGNAL ENTRANCE BOX
SIGNAL ENTRANCE BOX

SECURE 24-CHANNEL CABLE
REPEATER WITH 12-CHANNEL CABLE
DROP AND INSERT AN/TCC-73 A(V)1 OR (V)2.

BLOCK DIAGRAM TEST SETUP

2-24. SYSTEMS SELF-TEST. (CONT)

TELEPHONE SIGNAL CONVERTER CV-1548/G



Perform the following operational checks and adjustments on CV-1548/G.

1. Remove perforated front cover (1).
2. Check that all plug-in circuit cords are seated firmly in their slots.
3. In power supply panel 18A1 (2), check that the correct fuse (1 1/2 amp) is installed in fuseholder (3).
4. Install perforated front cover (1).
5. Set all the 2W/4W channel switches (4) to 4W.
6. Set POWER switch (5) to ON. Power indicator lamp will light and the 20 Hz neon lamp (6) on panel 18A2 (7) will glow.
7. Operate meter select switch through each of the positions given below and observe that the TEST ALIGN meter indicates in designated area.

NOTE

Some CV-1548/Gs do not contain a meter select switch and a TEST ALIGN meter.

Switch Position	Meter Indication
-	yellow area
+	yellow area
20 drive	yellow area
20	yellow area
1600	green area (If not, adjust 1600 control on panel 18A2.)

2-24. SYSTEMS SELF-TEST. (CONT)

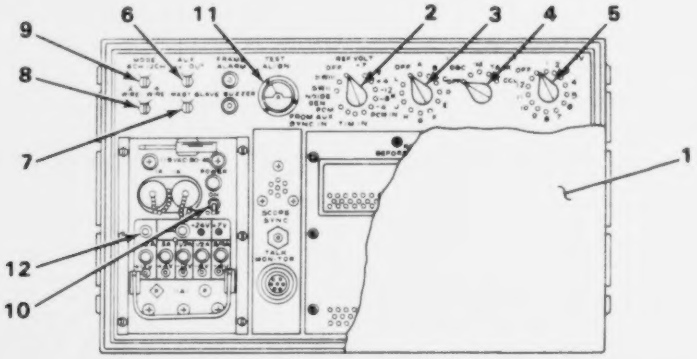
TELEPHONE SIGNAL CONVERTER CV-1548/G (CONT)

NOTE

If TEST-ALIGN meter does not give proper meter indications as listed in step 7, perform the corrective action listed below.

Normal Indication	Corrective Action
-(yellow)	Replace 1/2 ASB fuses on panel 18A1.
+ (yellow)	Replace 1 1/2 A fuse on panel 18A1.
20 drive (yellow)	Replace panel 18A2.
20 (yellow)	Replace panel 18A2.
1600 (green)	Replace panel 18A2.

MULTIPLEXER TD-660(*)/G



EL3TR222

Perform the following operational checks and adjustments on TD-660(*)/G.

1. Remove front cover (1).
2. Check that all plug-in circuit cards are seated firmly in their slots.
3. Install front cover (1).
4. Set switches I (2), II (3), III (4) and IV (5) to OFF.
5. Set AUX switch (6) to OUT.
6. Set MASTER/SLAVE switch (7) to MASTER.
7. Set 2 WIRE/4 WIRE switch (8) to 4W.
8. Set 6 CH/12 CH MODE switch (9) to 12 CH.
9. Set AC POWER switch (10) to ON. Power indicator lamp will light. Ignore frame alarm lamp and audible alarm. To silence alarm, depress BUZZER OFF switch (11).
10. Operate selector switch I (2) through each of the positions given below and observe that TEST ALIGN meter (12) indicates in designated area.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-660(*)/G (CONT)

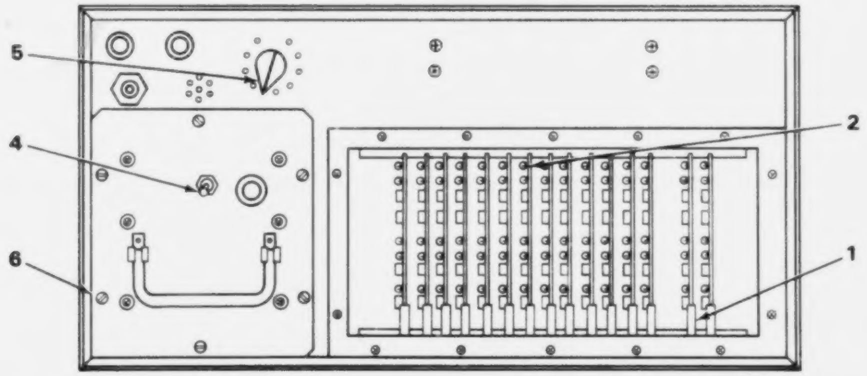
Switch Position	Meter Indication
+7	yellow
+12	hairline (green area)
+4	green
-12	green
-6	green
-4	green

NOTE

If TEST ALIGN meter (12) indications do not correspond to the meter readings performed in step 10, perform a +12 adjustment as given in steps 11 through 14. Repeat step 10. If meter indications are still incorrect, replace applicable fuse or panel.

11. Operate selector switch I (2) to +7 and observe that TEST ALIGN meter (12) indicates in yellow area.
12. Operate selector switch I (2) to +12.
13. Loosen the locknut on the +12V control (13) and adjust for hairline reading on the TEST ALIGN meter (12).
14. Tighten the locknut on the +12V control (13).
15. Operate selector switch I (2) to SW III position.
16. Operate selector switch III (4) to the OSC position. TEST ALIGN meter (12) should indicate in the green area, signifying the tone oscillator is operating properly. If TEST ALIGN meter does not indicate in green area, replace panel 11A8.

DATA BUFFER TD-1065/G



EL3TR223

Perform the operational checks and adjustments on TD-1065/G.

1. Remove front cover (1).

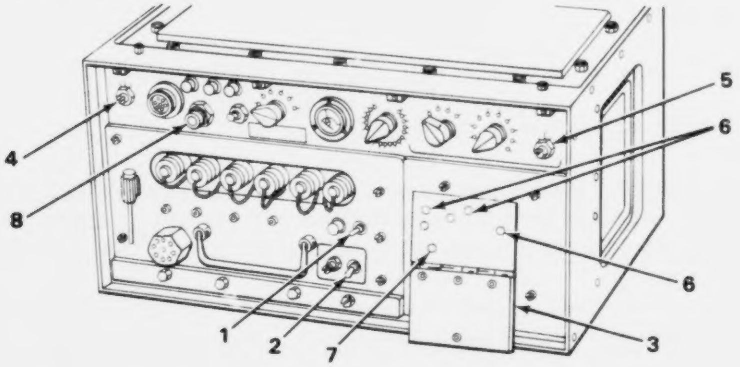
2-24. SYSTEMS SELF-TEST. (CONT)

DATA BUFFER TD-1065/G (CONT)

2. Check that all plug-in circuit cards are seated firmly in their slots.
3. Set all 12, 2W/4W switches (2) to 4W.
4. Replace front cover (1).
5. Set POWER switch (3) to ON. Power indicator lamp will light. Ignore the frame alarm and audible alarm. To silence the alarm, depress the BUZZER OFF switch (4).
6. Operate selector switch (5) to each of the settings given below. If indicator lamp does not light, replace power supply (6).

Rotary Switch	Indicator Lamp
-10 v	lights
+ 10 v	lights

MULTIPLEXER TD-754/G OR TD-204/U



EL3TR224

Perform the operational checks and adjustments on TD-754/G or TD-204/U.

WARNING

High voltage of 1,000 vdc can exist in the equipment when PWR switch and CABLE CURRENT switch is set to ON.

1. Set PWR switch (1) to OFF.
2. Set CABLE CURRENT switch (2) to OFF.
3. Remove front cover (3).
4. Check that all plug-in panels are seated firmly in their slots.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-754/G OR TD-204/U (CONT)

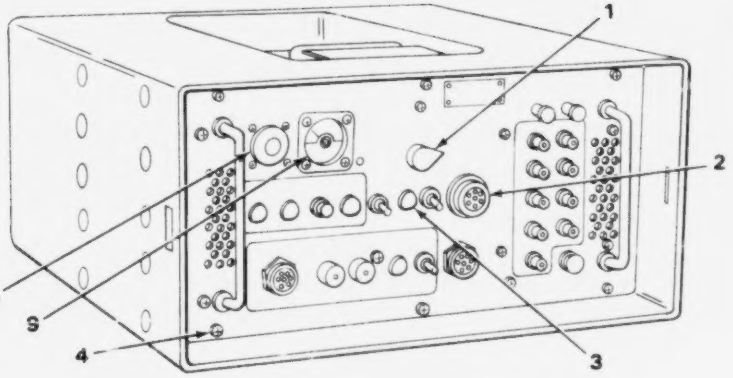
5. Set TRAFFIC SEL (TD-204/U) or MODE (TD-754/G) switch (4) to 6/12.
6. Set NORM OPR-ZERO SET-READ switch (5) to NORM.
7. Using screwdriver supplied on front panel of components, turn both miles switches (6) to 1/2 mile.
8. Set TONE-OFF switch (7) to OFF.
9. Set PWR switch (1) to ON. The AC POWER and ALARMS NO CABLE CURRENT lamps will light, and the buzzer will sound. To silence the alarm, depress the BUZZER OFF switch (8).

NOTE

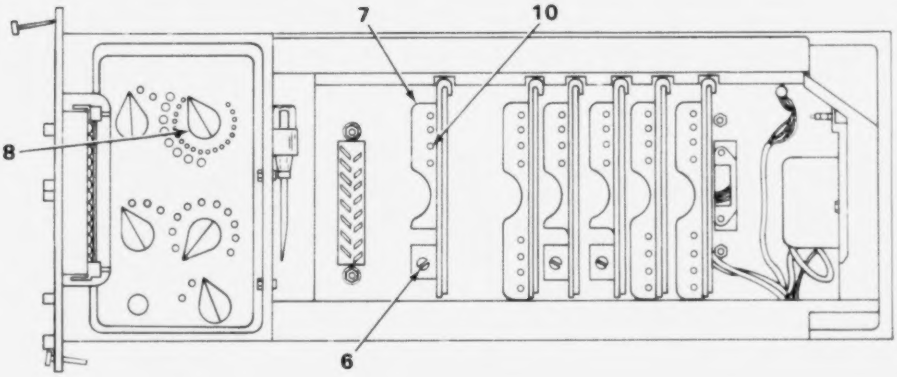
All equipment should be operating properly. To silence the alarms, depress the BUZZER OFF switches. If normal indications are not encountered during the following operating procedures, do not continue until proper indications are obtained. If proper indications cannot be obtained by adjustments or replacement of panels and/or associated cables, replace the component.

2-24. SYSTEMS SELF-TEST. (CONT)

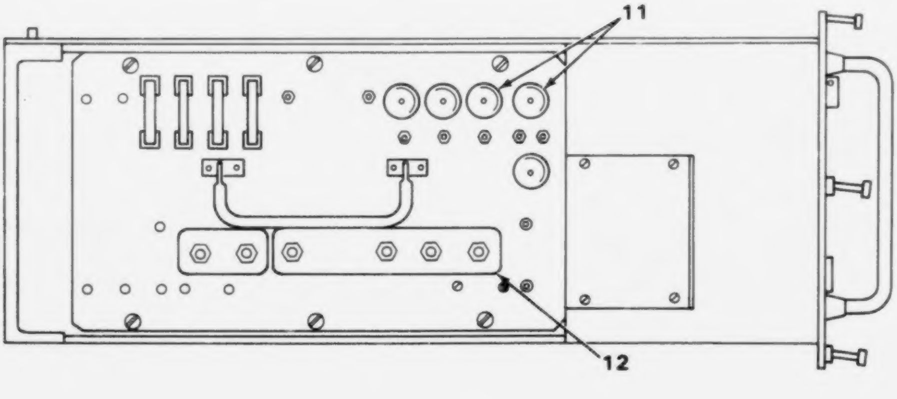
MULTIPLEXER TD-204/U



EL3TR225



EL3TR226



EL3TR227

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-204/U (CONT)

Perform the operational checks and adjustments on both TD-204/Us. If TD-754/G is used in facility, go to MULTIPLEXER TD-754/G (page 2-34).

1. Operate METER SELECT switch (1) to the following positions and check for proper indications on TEST ALIGN meter:

Position	Indication
TIMING IN	green
PCM IN-1	green

2. Set METER SELECT switch (1) to SERV FAC.

NOTE

Steps 3 through 14 are performed for order wire communications checks and alinements.

3. Connect a handset or headset to HEADSET connector (2) of each TD-204/U.
4. Set TALK-OFF-SIG switch (3) of one TD-204/U to SIG. CALL indicator will light and buzzer will sound at the other TD-204/U. Set TALK-OFF-SIG switch (3) to OFF.
5. Repeat step 4 for the second TD-204/U.
6. Set TALK-OFF-SIG switches (3) of both TD-204/Us to TALK and communicate through the headsets.
7. Loosen eight captive screws (4) and depress PUSH TO RELEASE CHASSIS button (5). Pull both TD-204/Us halfway out of their cases.
8. Set TONE switch (6) located on panel 6A2 (7) of system 2 TD-204/U to ON.
9. Operate SERV SEL switch (8) of system 1 TD-204/U to Q.

NOTE

System 2 TD-204/U is sending tone to system 1 TD-204/U.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-204/U (CONT)

10. Observe TEST ALIGN meter (9) on system 1 TD-204/U for hairline indication.

NOTE

If TEST ALIGN meter does not indicate hairline, do steps 11 and 12.

11. Rotate CRL adjustment (10) on system 1 TD-204/U fully counterclockwise.
12. Rotate CRL adjustment (10) on system 1 TD-204/U clockwise until TEST ALIGN meter (9) indicates hairline.
13. Set TONE switch (6) to OFF.
14. Repeat steps 8 thru 13 for system 2.
15. Operate the SERV SEL switch (8) to the positions listed below and check for yellow indication on TEST ALIGN meter (9).

Switch Position	Meter Indication
-10	yellow
+ 10	yellow
SUM ± 3	yellow
BAL	yellow

NOTE

If TEST ALIGN meter indication does not correspond to the switch positions performed in step 15, replace applicable fuse (11). If a fuse replacement does not correct the problem, a voltage adjustment is required. Do steps 16 thru 18.

16. Operate SERV SEL switch (8) to the position where the malfunction occurred.
17. Loosen the associated locknut on the voltage adjustment screw (12) and adjust for yellow meter indication.
18. Tighten the locknut.
19. Operate SERV SEL switch (8) to the following positions. Replace the appropriate panel if TEST ALIGN meter (9) does not indicate in green area.

2-24. SYSTEMS SELF-TEST. (CONT)

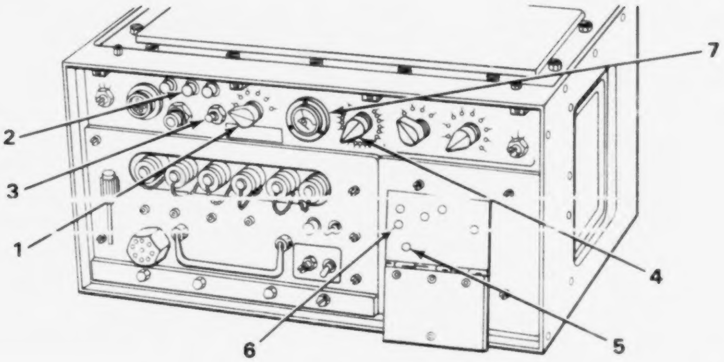
MULTIPLEXER TD-204/U (CONT)

Switch Position	Associated Panel	Meter Indication
A	6A4	green
B	6A7	green
C	6A7	green
D	6A7	green (24-channel operation only)
E	6A7	green
F	6A7	green (24-channel operation only)
G	6A7	green
H	6A5	green
I	6A5	green
J	6A6	green
K	6A6	green
L	6A6	green
M	6A6	green
N	6A6	green
O	6A3	green (TONE switch on panel 6A2 must be set to ON and TALK-OFF-SIG switch must be set to OFF.)
P	6A3	green (TONE switch on panel 6A3 must be set to ON, patch through connected, and TALK-OFF-SIG switch set to OFF.)
Q	6A3	green
S	6A7	green

20. Operate SERV SEL switch (8) to + 10 position.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-754/G



EL3TR228

Perform the operational checks and adjustments on TD-754/G.

1. Operate METER SELECT switch (1) to the positions given below and check for proper indications on TEST ALIGN meter.

Switch Position	Meter Indication
TIM IN	green
PCM IN-1	green

2. Operate METER SELECT switch (1) to SERV FAC.

NOTE

Steps 3 through 13 are performed for order wire communications checks and alinements.

3. Connect a handset or headset to the HEADSET (2) connector of each TD-754/G.

4. Set TALK-OFF-SIG switch (3) of one TD-754/G to SIG. The CALL indicator will light and the buzzer will sound on the other TD-754/G. Set the TALK-OFF-SIG switch (3) to OFF.

5. Repeat step 4 for the second TD-754/G.

6. Set TALK-OFF-SIG switches (3) on both TD-754/G to TALK and communicate through headsets.

7. Operate SERV SEL switch (4) to M on system 1 TD-754/G.

NOTE

System 1 TD-754/G is sending tone to system 2 TD-754/G.

8. Operate SERV SEL switch (4) on system 2 TD-754/G to O.

9. Set TONE-OFF switch (5) on circuit card 12A2 on system 1 to ON.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-754/G (CONT)

10. TEST ALIGN meter indication of system 1 TD-754/G should be in the green area. If not, replace circuit card 12A2.

11. Adjust CRL potentiometer (6) located on panel 12A3 of system 2 TD-754/G to hairline of TEST ALIGN meter (7).

12. Set TONE to OFF on system 1 TD-754/G.

13. Repeat steps 7 through 12 for system 2.

14. Operate SERV SEL switch (4) to the following positions and check for hairline indication on TEST ALIGN meter.

Switch Position	Meter Indication
+ 28 v	hairline
+ 12 v	hairline
+ 5 v	hairline
-6 v	hairline

NOTE

If TEST ALIGN meter does not indicate hairline in any of the switch positions, replace appropriate fuse. If a fuse replacement does not solve the problem, a voltage adjustment is required. Do steps 15 through 18.

15. Operate SERV SEL switch (4) to the position where the malfunction occurred.

16. Loosen the associated locknut on the voltage adjustment screw and adjust for hairline meter indication.

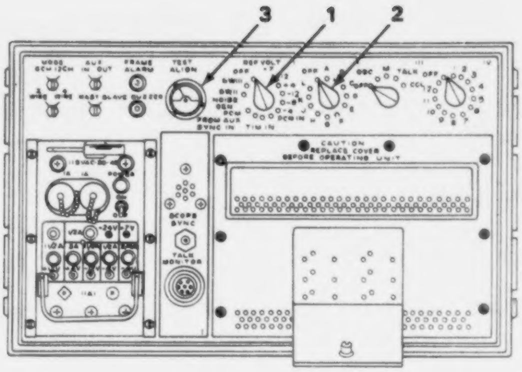
17. Tighten the locknut.

18. Operate SERV SEL switch (4) to the following positions. Replace the appropriate panel if TEST ALIGN meter does not indicate in green area.

Switch Position	Associated Panel	Meter Indication
A	12A4	green
B	12A4	green
C	12A4	green
D	12A4	green
E	12A4	green
F	12A4	green
G	12A4	green
H	12A4	green
J	12A4	green
K	12A4	green
L	12A4	green
M	12A3	green (Set TONE switch to ON.)

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-660(*)/G



EL3TR229

Perform the operational checks and adjustments on TD-660(*)/G.

1. Operate selector switch SW I (1) to the following positions and observe TEST ALIGN meter indications.

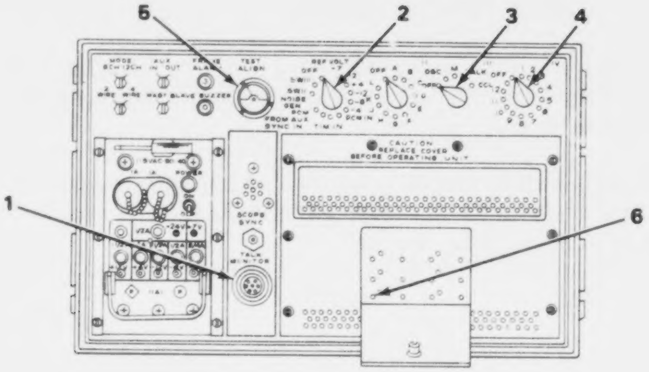
Switch Position	Meter Indication
PCM IN	green
TIM IN	green
NOISE GEN	yellow

2. Operate selector switch SW I (1) to the SW II position. Operate selector switch II (2) to the following positions and observe that TEST ALIGN meter (3) indicates in designated area. If TEST ALIGN meter does not indicate in designated area, replace appropriate panel.

Switch Position	Associated Panel	Meter Indication
A	11A2	green
B	11A3	green
C	11A2	green
D	11A3	green
E	11A5	yellow
F	11A4	green
G	11A2	green
H	11A7	green
J	11A6	yellow
K	11A7	yellow
L	11A6	yellow

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-660(*)/G (CONT)



EL3TR230

TWO-WAY SPEECH TEST

NOTE

Perform the following two-way speech test on each TD-660(*)/G.

1. Set all selector switches to OFF.
2. Connect a handset or headset to TALK MONITOR receptacle (1) of each TD-660(*)/G.
3. Operate selector SW I (2) to the SW III position.
4. Operate selector SW III (3) to TALK on both TD-660(*)/Gs.
5. Operate selector SW IV (4) of both TD-660(*)/Gs simultaneously to each channel position (1 thru 12) and perform a two-way speech test for each channel, observing good speech quality.

NOTE

If good speech quality is not observed, perform the following automatic channel gain level adjustment.

AUTOMATIC CHANNEL GAIN LEVEL ADJUSTMENT

1. Operate selector SW I (2) to SW III position.
2. Operate selector SW III (3) to MEAS position.
3. Operate selector SW IV (4) of both TD-660(*)/Gs simultaneously to each channel position (1 thru 12) and observe the TEST ALIGN meter (5) for hairline indication.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-660(*)/G (CONT)

NOTE

If the TEST ALIGN meter does not indicate hairline, monitor associated channel using headset, and listen for noise. If channel is quiet, adjustment is not necessary. If channel is noisy, perform step 4.

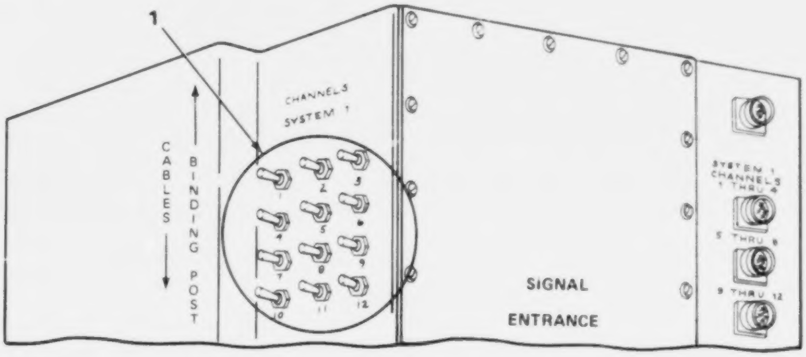
4. At each misadjusted or noisy channel, while monitoring channel with headset, adjust the associated AG control (6) on panels 11A5, either for hairline indication on TEST ALIGN meter (5) or until all noise is gone.

NOTE

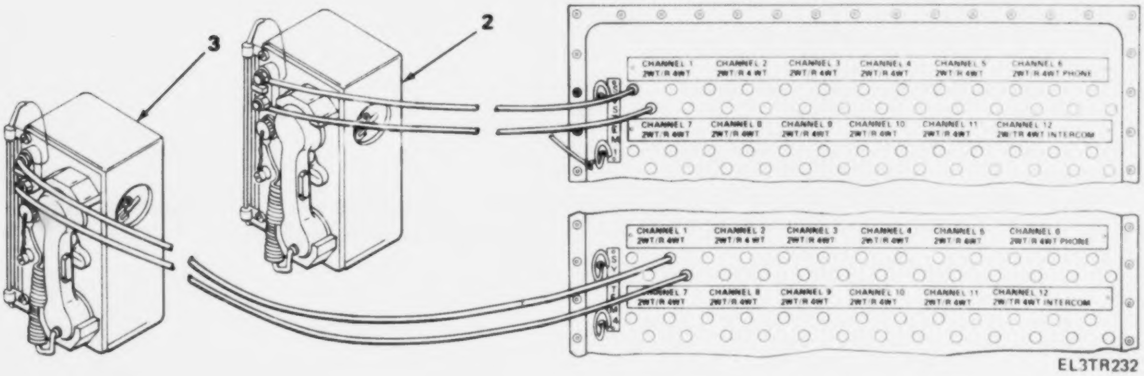
The channel AG controls are located on the front of panels 11A5. Channel adjustment controls are identified by numbers stenciled on the front cover. The circled upper numbers represent 6-channel operation and the lower numbers represent 12-channel operation.

If the AG control does not adjust the automatic channel gain level to hairline or until all noise is gone, replace associated 11A5 panel.

SIGNAL ENTRANCE BOX


1
CHANNELS SYSTEM 1
CABLES
BINDING POST
1 2 3 4 5 6 7 8 9 10 11 12
SIGNAL ENTRANCE
SYSTEM 1 CHANNELS 1 THRU 4
5 THRU 8
9 THRU 12

EL3TR231


3
2
CHANNEL 1 2WT/R 4WT
CHANNEL 2 2WT/R 4 WT
CHANNEL 3 2WT/R 4WT
CHANNEL 4 2WT/R 4WT
CHANNEL 5 2WT/R 4WT
CHANNEL 6 2WT/R 4WT PHONE
CHANNEL 7 2WT/R 4WT
CHANNEL 8 2WT/R 4WT
CHANNEL 9 2WT/R 4WT
CHANNEL 10 2WT/R 4WT
CHANNEL 11 2WT/R 4WT
CHANNEL 12 2W/TR 4WT INTERCOM
SYSTEM

EL3TR232

2-24. SYSTEMS SELF-TEST. (CONT)

SIGNAL ENTRANCE BOX (CONT)

1. Set 12 BINDING POST/CABLES switches (1) to BINDING POSTS position on signal entrance boxes.
2. Connect telephone (2) to pair 2WT/R binding posts channel 1 of system 1 on signal entrance box.
3. Connect second telephone (3) to pair 4WT binding posts of channel 1 system 2 on signal entrance box.
4. Talk into system 2 telephone (3) and your voice will be heard on system 1 telephone (2).
5. Disconnect both telephones.
6. Connect telephone (2) to pair 4WT binding posts channel 1 of system 1 on signal entrance box.
7. Connect second telephone (3) to pair 2WT/R binding posts of channel 1 system 2 on signal entrance box.
8. Talk into system 1 telephone (3) and your voice will be heard on system 2 telephone (2).
9. Repeat steps 2 thru 8 for channels 1 thru 12 on systems 1 and 2.

2-24. SYSTEMS SELF-TEST. (CONT)

Repeat the operational check for all components. Substitute systems 3 and 4, 5 and 6, and 7 and 8, respectively. Turn off all associated components after both systems are checked.

MULTIPLEXER TD-976/G

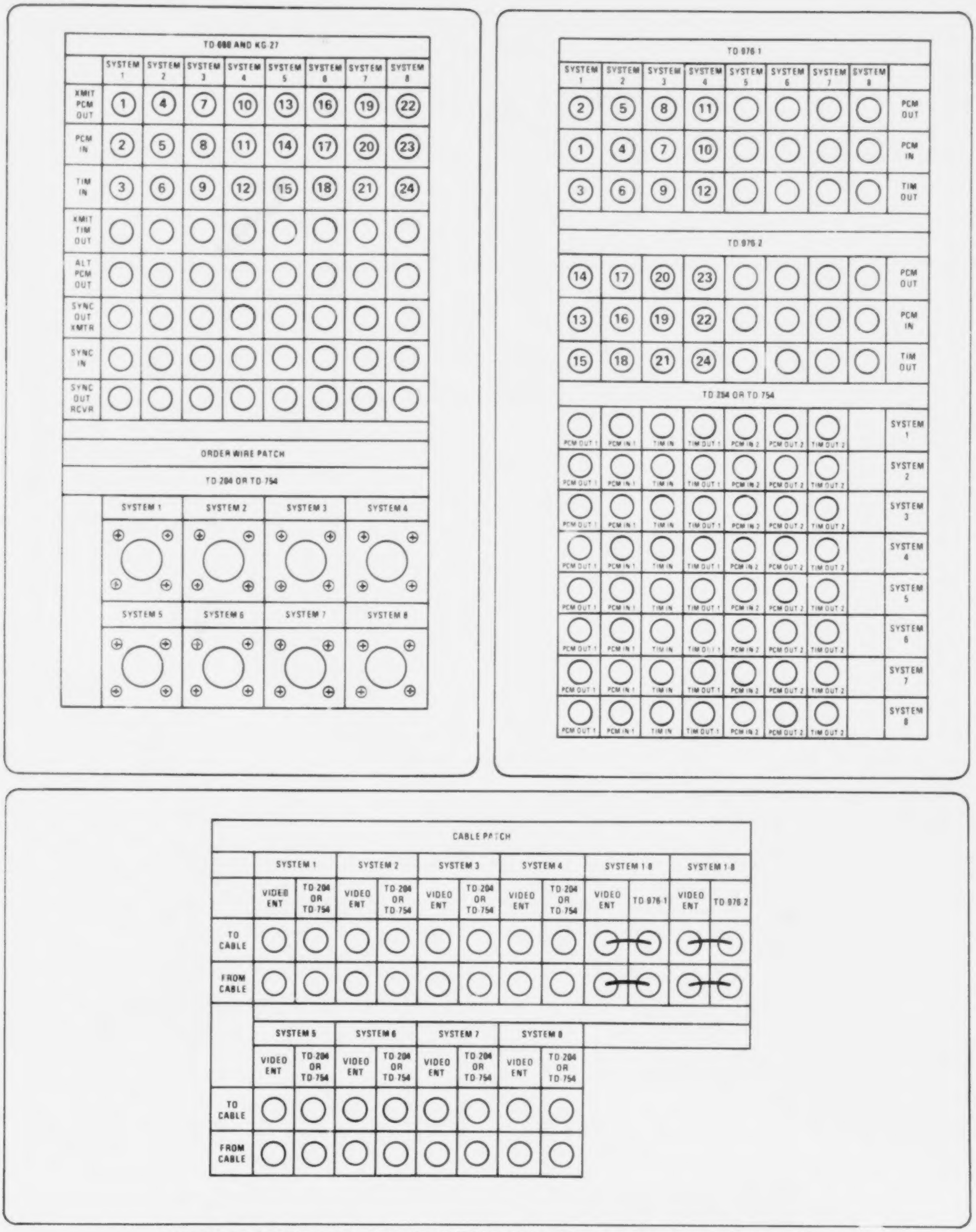
Make the following patch panel cable connections using patch cords. (See page 2-27.) The following systems self-test is for a 48-channel system.

TD-660 and KG-27		TD-976-1		TD-976-2	
XMIT PCM OUT	SYS1	PCM IN	SYS1		
PCM IN	SYS1	PCM OUT	SYS1		
TIM IN	SYS1	TIM OUT	SYS1		
XMIT PCM OUT	SYS2	PCM IN	SYS2		
PCM IN	SYS2	PCM OUT	SYS2		
TIM IN	SYS2	TIM OUT	SYS2		
XMIT PCM OUT	SYS3	PCM IN	SYS3		
PCM IN	SYS3	PCM OUT	SYS3		
TIM IN	SYS3	TIM OUT	SYS3		
XMIT PCM OUT	SYS4	PCM IN	SYS4		
PCM IN	SYS4	PCM OUT	SYS4		
TIM IN	SYS4	TIM OUT	SYS4		
XMIT PCM OUT	SYS5			PCM IN	SYS1
PCM IN	SYS5			PCM OUT	SYS1
TIM IN	SYS5			TIM OUT	SYS1
XMIT PCM OUT	SYS6			PCM IN	SYS2
PCM IN	SYS6			PCM IN	SYS2
TIM IN	SYS6			TIM OUT	SYS2
XMIT PCM OUT	SYS7			PCM IN	SYS3
PCM IN	SYS7			PCM OUT	SYS3
TIM IN	SYS7			TIM OUT	SYS3
XMIT PCM OUT	SYS8			PCM IN	SYS4
PCM IN	SYS8			PCM OUT	SYS4
TIM IN	SYS8			TIM OUT	SYS4

SYSTEM 1-8		SYSTEM 1-8	
VIDEO ENT	TD-976-1	VIDEO ENT	TD-976-2
CABLE TO	CABLE TO	CABLE TO	CABLE TO
CABLE FROM	CABLE FROM	CABLE FROM	CABLE FROM

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-976/G (CONT)

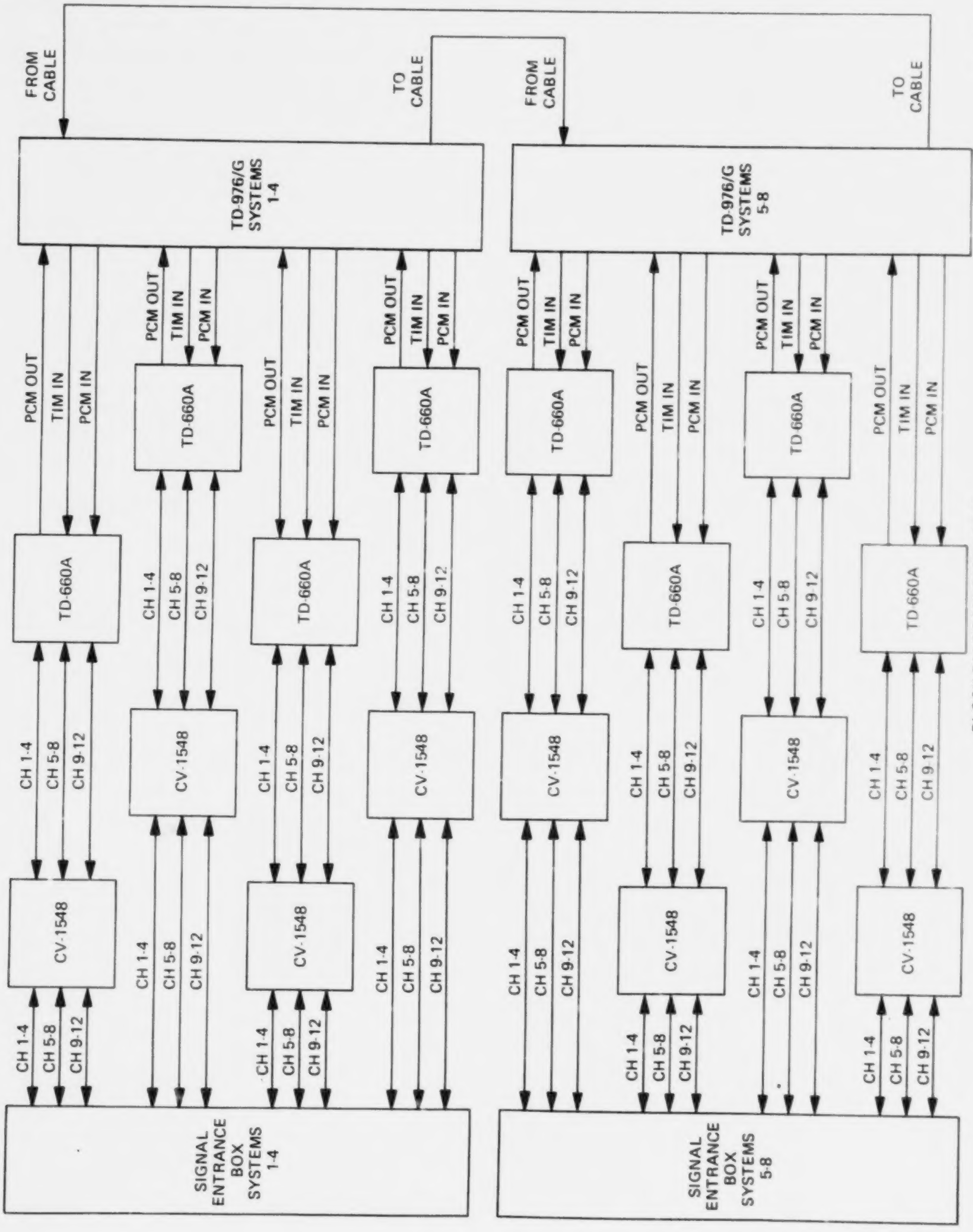

TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT
SYNC OUT XMTR
SYNC IN
SYNC OUT RCVR
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
ORDER WIRE PATCH
TD 204 OR TD 754
TD 976 1
PCM OUT
PCM IN
TIM OUT
TD 976 2
TD 204 OR TD 754
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
CABLE PATCH
SYSTEM 1-8
VIDEO ENT
TD 204 OR TD 754
TD 976 1
TD 976 2
TO CABLE
FROM CABLE

SYSTEM 1-8 CONNECTED AS FOUR 12/24/48-CHANNEL CABLE REPEATER SYSTEMS

EL3TR233

2-24. SYSTEMS SELF-TEST. (CONT)

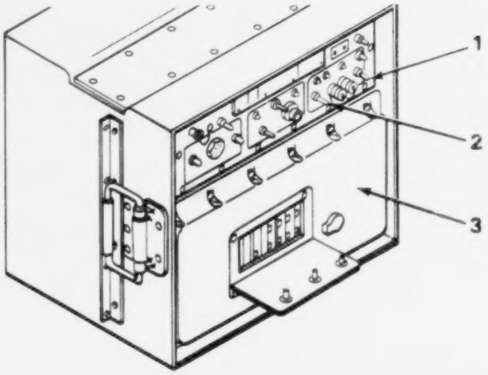
MULTIPLEXER TD-976/G (CONT)


FROM CABLE
TO CABLE
FROM CABLE
TO CABLE
TD-976/G SYSTEMS 1-4
TD-976/G SYSTEMS 5-8
PCM OUT
TIM IN
PCM IN
TD-660A
CH 1-4
CH 5-8
CH 9-12
CV-1548
SIGNAL ENTRANCE BOX SYSTEMS 1-4
SIGNAL ENTRANCE BOX SYSTEMS 5-8
EL3TR234

BLOCK DIAGRAM TEST SETUP

2-24. SYSTEMS SELF-TEST. (CONT)

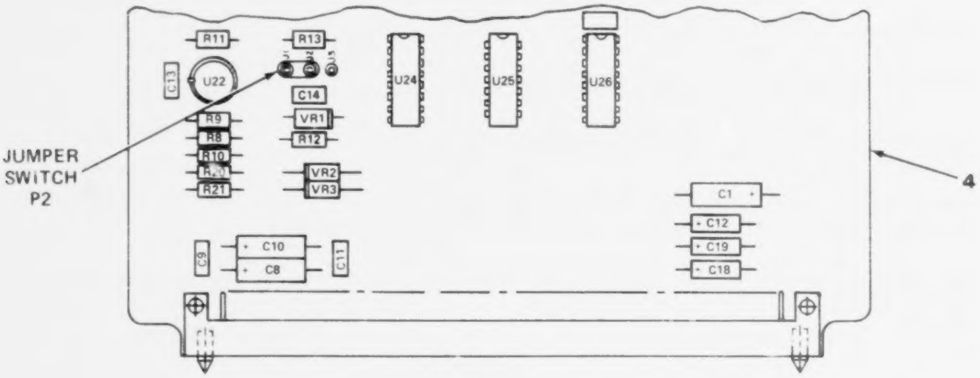
MULTIPLEXER TD-976/G (CONT)



EL3TR236

Perform the following operational checks and adjustments to both TD-976/Gs.

1. Set POWER SUPPLY switch (1) and POWER CABLE switch (2) to OFF.
2. Remove front cover (3).
3. Check that all plug-in circuit cards are seated firmly in their slots.


R11
R13
C13
U22
J1
J2
J3
C14
VR1
R12
R9
R8
R10
R20
R21
VR2
VR3
U24
U25
U26
JUMPER SWITCH P2
4
C1
C12
C19
C18
C9
C10
C8
C11

EL3TR237

NOTE

The following steps 5, 6 and 7 are for digital order wire settings.

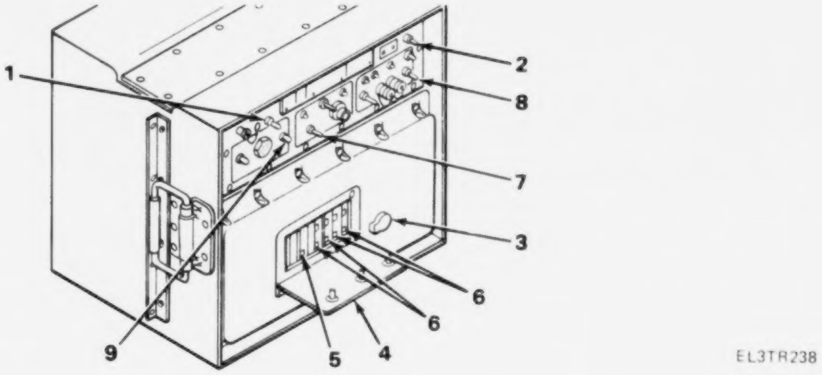
4. Remove circuit card 21A3 (4).
5. Set data rate to 75 baud using the chart below. Remove and install JUMPER SWITCH P2 in required position.

Rate	P2 position
75 baud	between J2 and J3
1200 baud	between J1 and J2

6. Install circuit card 21A3 (4) and front cover (3).

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-976/G (CONT)



9. Set DIGITAL LOOPBACK switch (1) to OFF.
10. Set CABLE TEST switch (2) to OFF.
11. Set CABLE MILES switch (3) to 1/4 mile.
12. Open access door (4).
13. Set DATA RATE switch (5) to LO.
14. Set GROUP RATE switches 1 through 6 to ON.
15. Set VOICE OW TALK/LISTEN-OFF-RING switch (7) to OFF.
16. Remove the 1/4 mile of CX-11230/G cable from the video entrance box receptacles and connect it to the SYSTEM 1-8-1 and SYSTEM 1-8-2 receptacles.
17. Set POWER SUPPLY switch (8) to ON. Check that POWER AC and POWER DC indicators are lit.

NOTE

If POWER AC and POWER DC indicators are not lit, check input power. If POWER AC indicator is lit and POWER DC indicator is not lit, set POWER SUPPLY switch to OFF, then to ON. Check for bad associated lamp or fuse.

18. Depress ALARM TEST switch (9) and check that all front panel visual alarms and indicators are lit and the audible alarm produces an alternating on-off beeping sound.

NOTE

If one or more indicators do not light or if audible alarm horn does not sound, replace AD card 21A1.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-976/G (CONT)

19. Set DIGITAL LOOPBACK switch (1) to ON and check that FRAME ALARM, EQUIP ALARM, and OUTPUT ALARMS 1 through 8 indicators are out.

NOTE

Ignore other visual or audible alarm indicators that may be activated at this time.

20. Set DIGITAL LOOPBACK switch (1) to OFF.

21. Set all POWER switches on all components, except the TD-754/Gs, to ON.

NOTE

Check that POWER indicators on all components are lit. All frame alarm lamps will light and audible alarms will sound momentarily. Depress BUZZER OFF switch if any audible alarms sound for more than 10 seconds. All equipment will be operating normally at this time.

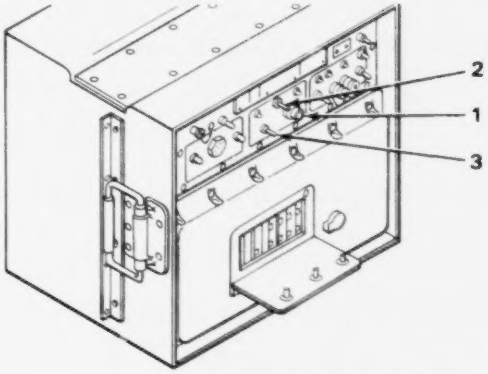
22. Perform a two-way speech test on the TD-660(*)/G system 1 and TD-660(*)/G system 5. (See page 2-43.)

NOTE

If good speech quality is observed, all components are operating normally.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-976/G (CONT)



EL3TR239

Perform the following order wire checks and adjustments for both TD-976/Gs. This procedure applies to analogue voice order wire (AVOW) or digital voice order wire (DVOW).

1. Connect a handset or headset to HANDSET connectors (1) on both TD-976/Gs.

NOTE

For AVOW, set VOICE O.W. select switch to CABLE. For DVOW, set VOICE O.W. select switch to SYSTEM.

2. Set VOICE O.W. select switch (2) to CABLE.
3. Set VOICE O.W. TALK/LISTEN-OFF-RING switch (3) to RING on one TD-976/G. A lit VOICE O.W. CABLE CALL indicator and an audible ALARM will sound on the sound TD-976/G.

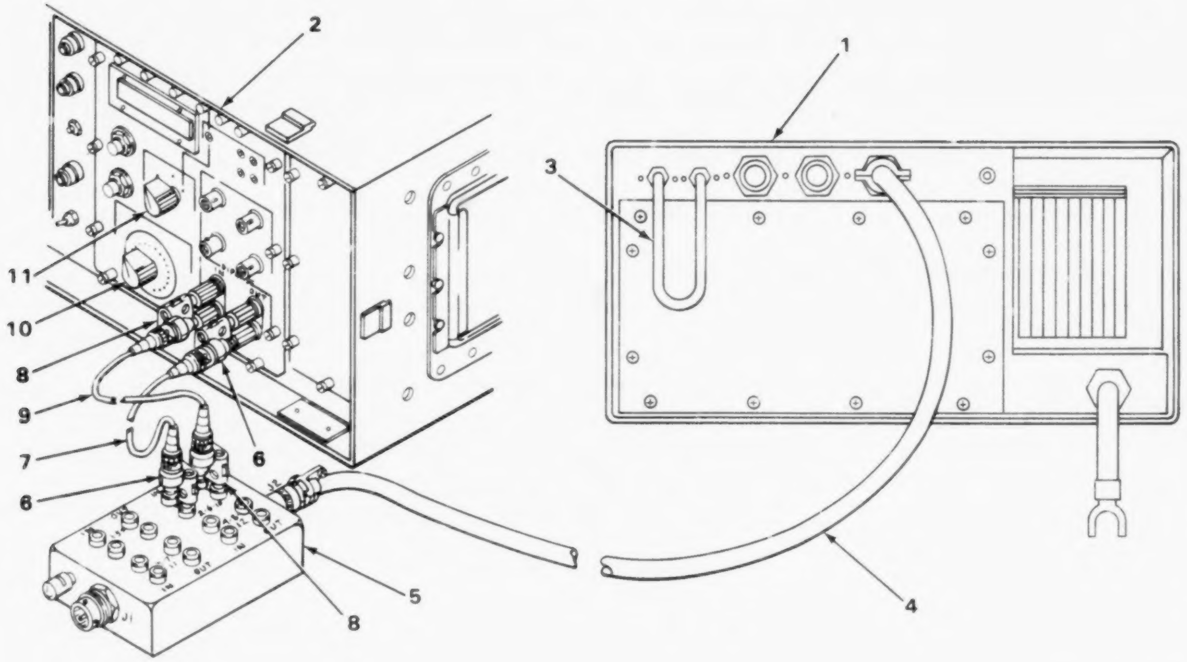
NOTE

A lit VOICE O.W. SYSTEM CALL indicator light and audible ALARM will sound on the second TD-976/G for (DVOW) when VOICE O.W. TALK/LISTEN-OFF-RING switch (3) is set to RING.

4. Set both VOICE O.W. TALK/LISTEN-OFF-RING switches (3) to TALK/LISTEN and converse between both handsets or headsets.
5. Do steps 1 through 4 for second TD-976/G.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-1069/G



EL3TR240

The following procedure will check 6 of the 12 digital data circuit cards (A2) and all 12 of the rate mode circuits (card cases) of the TD-1069/G. A Digital Data Generator SG-1139/G is required and contains all the necessary components to perform this task.

NOTE

Loopback testing must be used because the input (channel) rate of a multiplexer is different from its output (group or pcm) rate, and a multiplexer ordinarily adds framing bits.

1. Set the POWER switches on the TD-1069/G (1) and SG-1139/G (2) to OFF.

2. Connect a signal cable (3) to MUX OUT and MUX IN receptacles on TD-1069/G (1).

3. Connect an audio cable (4) terminated in multipin connectors to J1 or J2 of interface box (5) supplied with SG-1139/G.

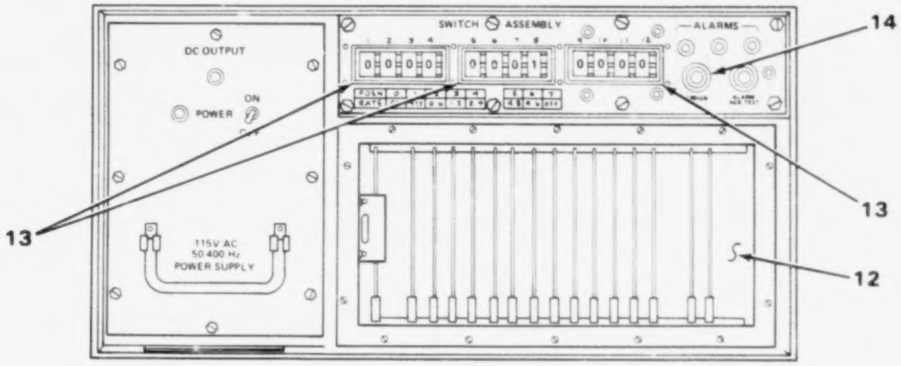
4. Connect the other end of audio cable (4) to the TD-1069/G (1) receptacle that corresponds to the channel being tested.

5. Use two BNC adapters (6) and a BNC cable (7) to connect SG-1139/G (2) DIPHASE OUT to interface box (5) IN receptacles (channels 1-5-9, 2-6-10, 3-7-11, or 4-8-12, as required).

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-1069/G (CONT)

6. Use two BNC adapters (8) and a BNC cable (9) to connect SG-1139/G (2) DIPHASE IN to interface box (5) OUT receptacles. Connect to the same channels as in step 5.
7. Set DATA RATE switch (10) on the SG-1139/G (2) to the 1.2 position.
8. Set the TIMING switch (11) on the SG-1139/G (2) to the MASTER position.
9. Remove front cover (12) on the TD-1069/G to allow access to the circuit cards.
10. Remove all 12 A2 and A3 circuit cards.
11. Install six A3 circuit cards in positions 1 through 6.



EL3TR241

12. Install six A2 circuit cards in positions 7 through 12.

NOTE

Channels 7, 8, 9, 10, 11, or 12 can now be tested for digital data.

The BNC adapters must be connected to the appropriate channel on the interface box that is being tested on the TD-1069/G. The audio table must also be connected to the proper channel 1-4, 5-8, or 9-12.

13. Set the rate mode switch (13) to position 3 for the desired channel 7 through 12 that is being tested.
14. Set POWER switch on the TD-1069/G and SG-1139/G to ON.
15. Depress the ASSIGN switch (14) on the TD-1069/G.

2-24. SYSTEMS SELF-TEST. (CONT)

MULTIPLEXER TD-1069/G (CONT)

NOTE

The ASSIGN switch (14) must be depressed when a change has been made in one or more rate mode switch settings.

DATA IN and TMG IN indicators will be lit and the FAULT indicator will not be lit on the SG-1139/G. If indications are not as described, connections are improper or TD-1069/G is faulty.

Interchange circuit card (A2) with another circuit card (A2) to determine if a circuit card (A2) or channel is bad. If replacement of circuit card (A2) does not solve the problem, replace TD-1069/G.

16. Depress SINGLE ERROR switch several times. Note that ERRORS display on SG-1139/G will advance one count each time the SINGLE ERROR switch is depressed, which indicates all connections are proper.

17. Depress the RESET DISPLAY switch on SG-1139/G.

NOTE

Display will read O. Display will remain O or will advance count very slowly if TD-1069/G is operating properly.

Green BER indicator lamp on the SG-1139/G will be lit if TD-1069/G is operating properly.

18. Do steps 1 through 17 for channels 7 through 12.

19. Remove all 12 A2 and A3 circuit cards from the TD-1069/G.

20. Install six A3 circuit cards in positions 7 through 12.

21. Install six A2 circuit cards in positions 1 through 6.

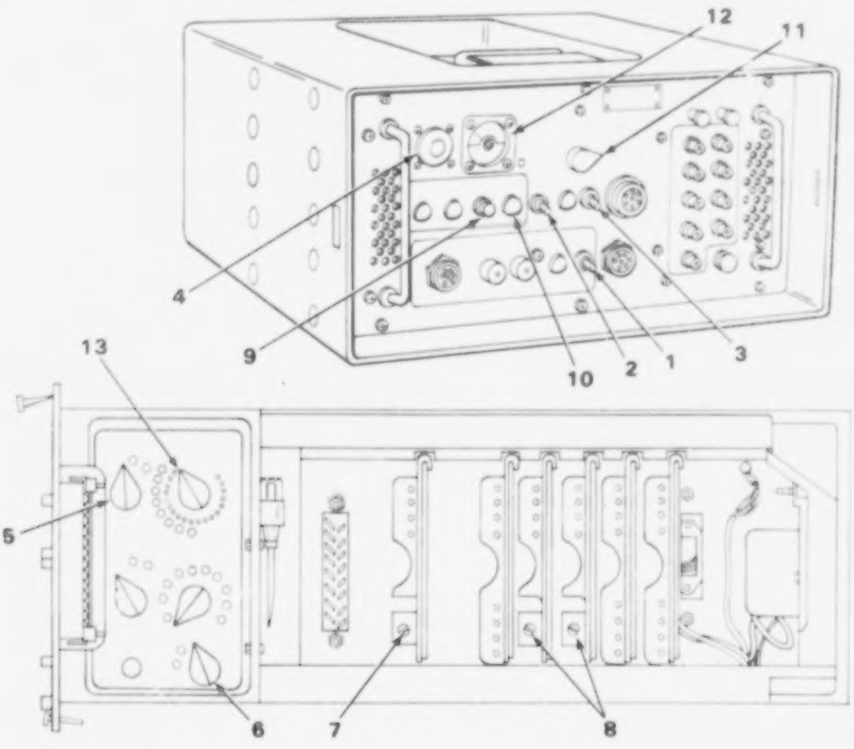
22. Do steps 1 through 17 for channels 1 through 6.

2-25. INITIAL SETUP OF EQUIPMENT.

Perform the systems self-test prior to doing the initial setup of equipment. The system planner will determine the mode of operation for the AN/TCC-73(*). Refer to chapter 1, section 3 for cabling, equipment, and patch panel arrangements. These procedures cover preliminary adjustments for the following equipment:

Multiplexer TD-204/U
Multiplexer TD-754/G
Multiplexer TD-660(*)G
Data Buffer TD-1065/G
Key Generator TSEC/KG-27
Signal Converter CU-1548(*)/G
Multiplexer TD-976/G
Multiplexer TD-1069/G
Orderwire for TD-204/U
Orderwire for TD-754/U
TD-660(*)G Channel Gain Adjustment

MULTIPLEXER TD-204/U



2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-204/U (CONT)

Perform the following procedures to each TD-204/U used in the AN/TCC-73(*):

1. Set POWER (1), CABLE POWER (2), and TALK-OFF-SIG (3) switches to OFF.
2. Depress PUSH TO RELEASE CHASSIS button (4) and slide TD-204/U out of its case far enough to expose the service facility panel.
3. Operate TRAFFIC SEL switch (5) to the position corresponding to the traffic capacity of the systems as shown in the table below.

System configuration	TD-754/G MODE switch position		TD-204/U TRAFFIC SEL switch position		TD-660A/G MASTER-SLAVE switch position	
	Odd no. systems	Even no. systems	Odd no. systems	Even no. systems	Odd no. systems	Even no. systems
12-channel terminal	6/12	6/12	12	12	MASTER	MASTER
24-channel terminal	24	---	24	---	MASTER	SLAVE
12/24/48-channel repeater	48AR	48AR	48AR	48AR	---	---
24-channel repeater with 12-channel drop and insert	24	24	24	24	SLAVE	SLAVE

Traffic Capacity

4. Set NORM OPR-ZERO SET-READ switch (6) to NORM OPR.
5. Set TONE-OFF switch (7) on panel 6A2 to OFF.
6. Set MILE switches (8) on panel 6A4 and 6A5 to the position corresponding to the distance of the first TD-206/G in transmission link.

NOTE

Both mile switches on panels 6A4 and 6A5 in a TD-204/U must be set at the same position when one or more TD-206/G are used in the cable link. If two TD-204/Us are connected with 1 mile or less of transmission cable, set the panel 6A4 MILE switches on both TD-204/Us to the position corresponding to the length of transmission cable (1/4, 1/2, 3/4, or 1 mile) and panel 6A5 MILE switches to the 1-mile position.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-204/U (CONT)

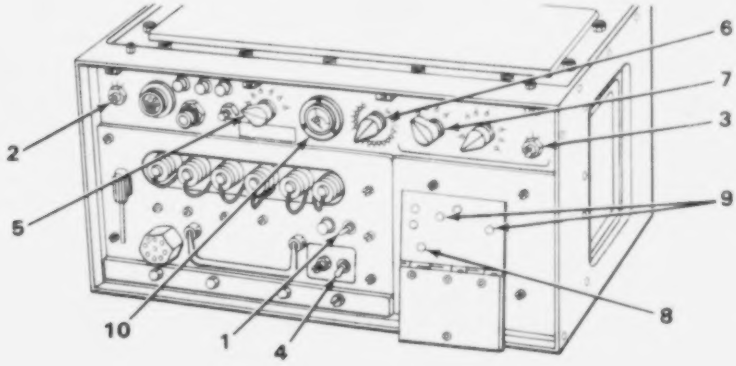
7. Set POWER switch (1) to ON. Check that the POWER and ALARMS NO CABLE CURRENT indicators light and the buzzer sounds. Silence buzzer by depressing ALARMS BUZZER OFF switch (9).

NOTE

If buzzer sounds in steps 8 through 12, depress ALARMS BUZZER OFF switch (9) to silence it.

8. Set CABLE POWER switch (2) to ON. Check that ALARMS NO CABLE CURRENT indicator (10) is not lit.
9. Operate METER SELECT switch (11) to CABLE I, and check for yellow area indication on TEST ALIGN METER (12).
10. Operate METER SELECT switch (11) to CABLE V and check that TEST ALIGN meter (12) indicates 10.8 times the number of TD-206/G in cable link, plus 13.
11. Operate METER SELECT switch (11) to SERV SEL.
12. Operate SERV SEL switch (13) to RCC and check for a green area indication on TEST ALIGN meter (12).

MULTIPLEXER TD-754/G



EL3TR244

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-754/G (CONT)

Perform the following procedures to each TD-754/G used in the AN/TCC-73(*).

1. Set PWR switch (1) to OFF.
2. Set the MODE switch (2) to either 6/12, 24, or 48R position corresponding to the traffic capacity as shown on page 2-57.
3. Set the READ-ZERO-SET-NORM OPR switch (3) to NORM OPR.
4. Set CABLE CURRENT switch (4) to OFF.
5. Operate METER SEL switch (5) to SERV FAC.
6. Operate SERV SEL switch (6) to REF.
7. Set FAULT LOC MILES switch (7) to 0.

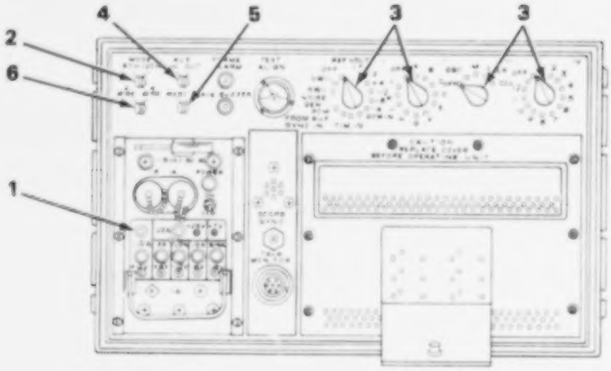
NOTE

Use screwdriver supplied with TD-754/G to make adjustments in step 8.

8. Set TONE switch (8) to OFF.
9. Set CABLE MILES switches (9) on panels 12A4 and 12A5 to the distance (1/4, 1/2, 3/4, or 1 mile) of the nearest TD-206/G, TD-204/U, or TD-754/G. When two TD-754/Gs or TD-204/Us are connected in a cable link without a TD-206/G, set the CABLE MILES switch on panel 12A5 to 1 mile.
10. Set PWR switch (1) to ON. Check that PWR and CABLE CURRENT indicators light and the buzzer sounds. Silence buzzer by depressing BUZZER OFF switch.
11. Check that TEST ALIGN meter (10) shows yellow band indication.
12. Set CABLE CURRENT switch (4) to ON and check that CABLE CURRENT indicator extinguishes.
13. Operate METER SEL switch (5) to CABLE CURRENT and check that TEST ALIGN meter (10) shows a green band indication.
14. Operate METER SEL switch (5) to SERV FAC and SERV SEL switch (6) to REF. Check that TEST ALIGN meter (10) shows a yellow band indication.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-660(*)/G



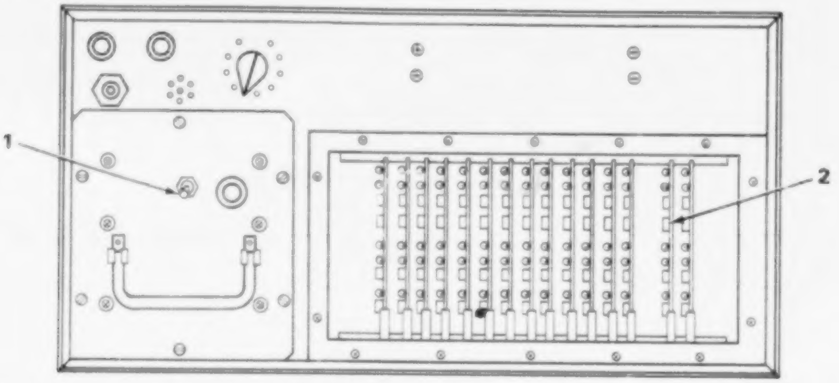
EL3TR245

Perform the following procedures on each TD-660(*)/G used in the AN/TCC-73(*) for a nonsecure system. For a secure system, refer to the security equipment manual KAM-133( ) TSEC.

1. Set POWER switch (1) to OFF.
2. Set MODE switch (2) to 6CH or 12CH.
3. Operate selector switches I, II, III, and IV (3) to OFF.
4. Set AUX switch (4) to OUT.
5. Set MASTER-SLAVE switch (5) to the required position. (See Traffic Capacity table on page 2-57.)
6. Set 2 WIRE/4 WIRE switch (6) to the position corresponding to the type of telephone or switchboard used.
7. Set the POWER switch (1) to ON.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

DATA BUFFER TD-1065/G



EL3TR246

Perform the following procedures to each TD-1065/G used in the AN/TCC-73(*).

1. Set the POWER switch (1) TO OFF.
2. Open access cover.
3. Set the 12 2W/4W switches (2) to the required position.
4. Close access cover.
5. Set POWER switch (1) to ON.

KEY GENERATOR TSEC/KG-27

Perform the following procedures to each TSEC/KG-27 used in the AN/TCC-73(*).

NOTE

Before the secure equipment is placed in the system, the system must be operating normally in a nonsecure mode.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

KEY GENERATOR TSEC/KG-27 (CONT)

1. Operate MONITOR switch to each voltage. Check position and observe that the MONITOR lamp lights in each position.

NOTE

The TD-660(*)/G must be on for step 2.

2. Operate MONITOR switch to each of the XMIT positions and observe that the MONITOR lamp lights in each position.

NOTE

The MONITOR lamp will not light if the distant terminal is not activated in step 3.

3. Operate MONITOR switch to each of the REC positions and observe that MONITOR lamp lights in each position.

NOTE

The TSEC/KG-27 will not synchronize with the distant terminal until the multiplexers have achieved synchronization. Frame alarms on the local MUX will be ON if the distant terminal is not transmitting.

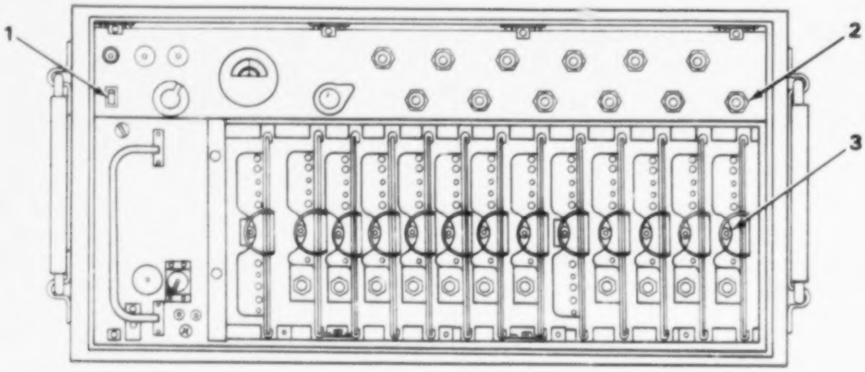
4. Set ON-OFF/RESET switch to OFF/RESET, then to ON to initiate a restart if the TSEC/KG-27 goes into the alarm condition. If alarm condition persists, refer to troubleshooting.

NOTE

For additional information pertaining to TSEC/KG-27 normal starting procedures, refer to KAM-258( )/TSEC.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

SIGNAL CONVERTER CV-1548(*)/G



EL3TR247

Perform the following procedures on each CV-1548(*)/G used in the AN/TCC-73(*).

NOTE

The TEST ALIGN meter, meter select switch, and associated panel markings are not used on the CV-1548A/G.

1. Check that POWER switch (1) is set to OFF.
2. Remove front cover.
3. Set the CH-2W-4W switches (2) and associated signaling mode switches (3) for each channel as indicated below.

Vf Channel Connection	Switch position	
	CH-2W-4W	Signaling mode
2-wire magneto line from SB-86/P, AN/TCC-7, TA-43/PT or TA-312/PT (20-Hz-signaling)	2W	AC
2-wire vf (no signaling)	2W	OFF
4-wire (no signaling)	4W	OFF

4. Set POWER switch (1) to ON.

LINE POLARITY CHECKS (CV-1548(*)/G AND AN/TTC-7)

Local Battery (LB) Line. In each panel 18A3 of the CV-1548(*)/G connected to an LB line, press TEST switch. If an incoming call does not register at the switchboard for the associated line, reverse the tip and ring wires.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

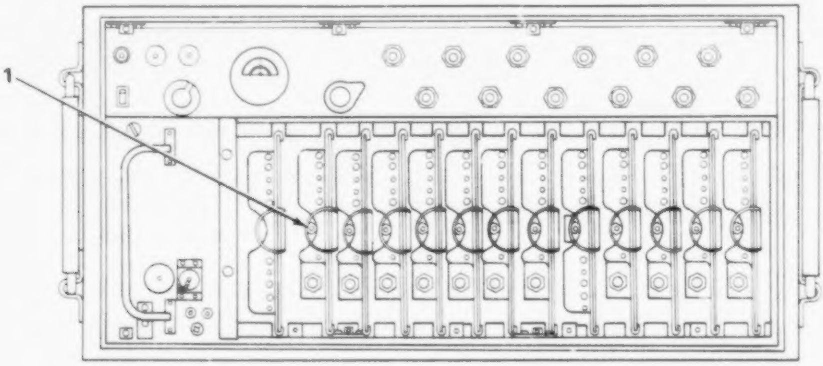
LINE POLARITY CHECKS (CV-1548/G and AN/TCC-7) (CONT)

Common Battery (CB) Line (terminate (TE) only). For each panel 18A3 of the CV-1548(*)/G connected to a terminate CB line, disconnect the CX-7870/TCC cables between the CV-1548(*)/G and the TD-660(*)/G. An incoming call will register on the switchboard for each channel. If the call indication does not disappear when the TEST switch on panel 18A3 is depressed, reverse ring and tip wires.

NOTE

Tip and ring wire polarity is not significant between the AN/TCC-7 originate (OR) trunks and the CV-1548(*)/G.

LINE POLARITY CHECKS (CV-1548(*)/G and Manual Telephone Switchboard SB-86/P)



EL3TR248

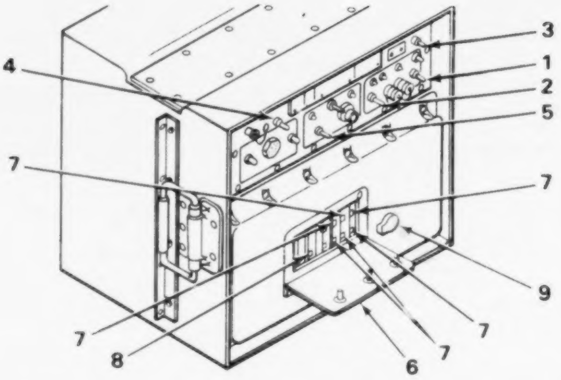
1. On each panel 18A3 of the CV-1548(*)/G connected to an SB-86/P circuit, operate the SIGNALING MODE switch (1) to (OR). Operate the line selector switch to (T) in each line of the SB-86/P connected to the CV-1548(*)/G and pull down all cords on the SB-86/P.
2. Reverse the tip and ring wires on each line that shows a white line indicator on the SB-86/P.
3. Set the SIGNALING MODE switch (1) on each panel 18A3 of the CV-1548(*)/G and the switches of the SB-86/P, as indicated below.

Type of 2-wire line connection from SB-86/P	CV-1548/G signaling mode switch	SB-86/P	
		Line selector	CIV TRKS
Civilian trunk	OR	M	ON
Trunk	TE	C	OFF
Magneto	AC	M	OFF

4. Install front cover.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-976/G



EL3TR249

Perform the following procedures for each TD-976/G used in the AN/TCC-73(*). For initial setup of the RAU, refer to TM 11-7025-202-12.

1. Set POWER SUPPLY switch (1) to OFF.
2. Set POWER CABLE switch (2) to OFF.
3. Set CABLE TEST switch (3) to OFF.
4. Set DIGITAL LOOPBACK switch (4) to OFF.
5. Set VOICE O.W. TALK/LISTEN-OFF-RING (5) to OFF.
6. Open access door (6).

NOTE

Based on system requirements, determine which of the eight available PCM user groups (systems) will be in use.

7. For each PCM user group (system) to be used, set its corresponding GROUP toggle switch (7) to ON.

NOTE

If the first four PCM user groups (systems 1-4) are used, set DATA RATE switch (8) to LO.

If the number of PCM user groups (system 1-8) is five or more, set DATA RATE switch (8) to HI.

8. Set DATA RATE switch (8) to required position.

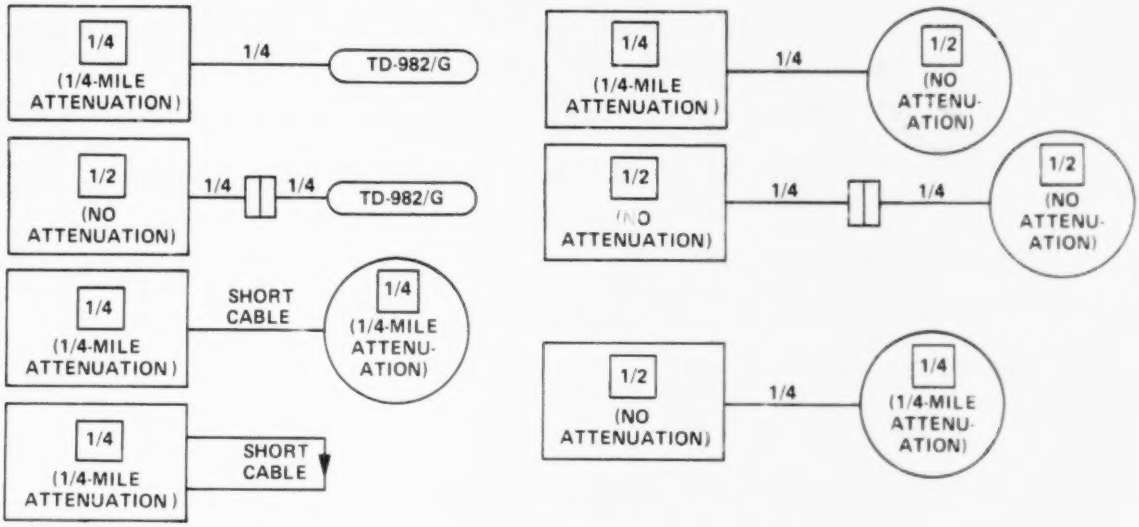
2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-976/G (CONT)

NOTE

Determine distance (in miles) between TD-976/G and its first cable system connection with another equipment. This connection is typically to a TD-982/G or far end equipment, such as another TD-976/G, TD-1147/TSC or an AN/GRC-144 radio set.

9. Set CABLE MILES switch (9) to position (1/4 or 1/2) using the chart given below.


1/4
(1/4-MILE ATTENUATION)
1/4
TD-982/G
1/2
(NO ATTENUATION)
1/4
1/4
TD-982/G
1/4
(1/4-MILE ATTENUATION)
SHORT CABLE
1/4
(1/4-MILE ATTENU-ATION)
1/4
(1/4-MILE ATTENUATION)
SHORT CABLE
1/4
(1/4-MILE ATTENUATION)
1/4
1/2
(NO ATTENU-ATION)
1/2
(NO ATTENUATION)
1/4
1/4
1/2
(NO ATTENU-ATION)
1/2
(NO ATTENUATION)
1/4
1/4
(1/4-MILE ATTENU-ATION)

NOTES:

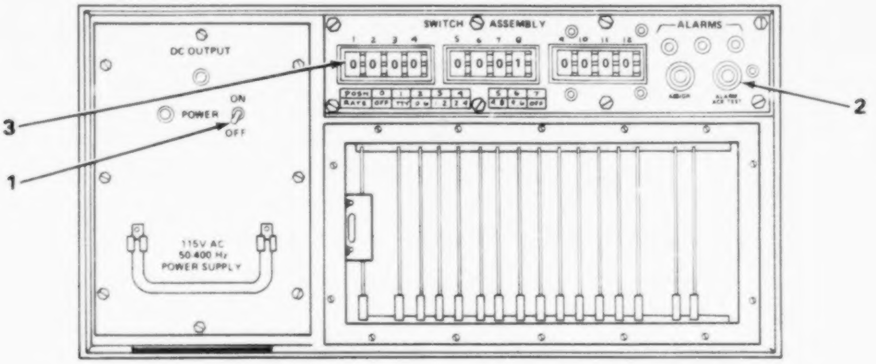
1. NEAR-END EQUIPMENT IS AT LEFT OF EACH DIAGRAM. NEAR-END SQUARES REPRESENT TD-976/G EQUIPMENTS; FAR-END CIRCLES REPRESENT EITHER TD-976/G, TD-1147/TSC, OR AN/GRC-144 EQUIPMENTS.
2. LINES BETWEEN EQUIPMENTS REPRESENT CX-11230/G CABLE IN 1/4-MILE INCREMENTS (1/2 MILE MAXIMUM TOTAL LENGTH).
3. SHORT CABLES ARE 100 FEET MAXIMUM IN LENGTH.
4. WITHIN EACH EQUIPMENT SQUARE OR CIRCLE:
   A. DATA WITHIN BOX (1/2 OR 1/4) REPRESENT REQUIRED SETTING OF LINE BUILDOUT SWITCH.
   B. DATA WITHIN PARENTHESES ( ) REPRESENT ATTENUATION PRODUCED BY LINE BUILDOUT SWITCH.

EL3TR250

10. Set POWER SUPPLY switch (1) to ON.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-1069/G



EL3TR251

Perform the following procedures to each TD-1069/G used in the AN/TCC-73(*).

CAUTION

Be sure that all interconnecting cables are connected and properly routed before applying primary power to the TD-1069/G. Do not connect or disconnect the power cable, control cables, or power supply module (A1) while the POWER switch is set to ON.

NOTE

Channel 7 switch box SYS 1 or SYS 2 switch must be set to the position of the system in use. The audio CH7/DATA CH7 switch must be set to DATA CH7 position.

1. Set POWER switch (1) to ON. To silence the alarm, depress ALARM ACK/TEST switch (2).

NOTE

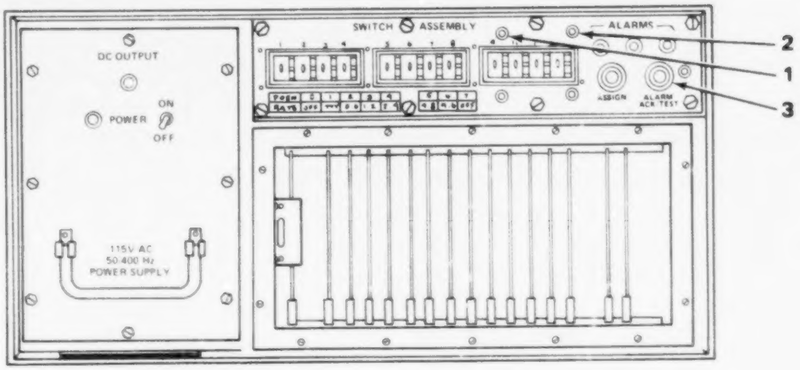
During turnon, and every time equipment changes are made, the audible alarm will sound. Silence the alarm by depressing the ALARM ACK/TEST switch (2).

Determine data rates of subscriber equipment. Remember that TTY position equals 1200 b/s.

2. Set CHAN RATE switches (3) to required position. For unused ports, set CHAN RATE switches to O.

2-25. INITIAL SETUP OF EQUIPMENT. (CONT)

MULTIPLEXER TD-1069/G (CONT)



EL3TR262

3. Check that RATE overload indicator (1) is not lit.

NOTE

If RATE overload is lit, check that the total bit rate of all ports combined is 30 kb or less.

4. Use an order wire telephone to check your data rate selections with the installer at the other end of the communications link.

NOTE

Ports used and transmission (data) rates selected must match at both ends of the communications link.

5. Check that FCTN ALARMS indicator (2) is not lit. If lit, depress ALARM ACK/TEST switch (3) and FCTN ALARMS indicator will extinguish.

NOTE

Disregard any lighted TRFC or FCTN ALARM lamps unless specifically indicated in the procedure. Anytime a CHAN RATE switch setting is changed, or any plug-in module is replaced while power is applied to the TD-1069/G, the ASSIGN button must be depressed to operate the reset logic circuits and return the TD-1069/G to an operational state.

2-26. CIRCUIT ALINEMENT.

NOTE

The procedures below must be performed on each system of the AN/TCC-73(*) that will be used.

ORDER WIRE FOR TD-204/U

Perform the order wire checks and alinements with the distant operator.

1. Connect a handset or headset to HEADSET receptacle on TD-204/U.
2. Operate TALK-OFF-SING switch to SIG, then to TALK.
3. After communication is established through the link, operate METER SELECT switch to SERV FAC and SERV SEL switch to Q.
4. Set local TD-204/U TONE-OFF switch on panel 6A2 to TONE.

NOTE

Local operator is sending tone to distant operator. If clear communication is established with distant operator or the TEST ALIGN meter on distant TD-204/U indicates hairline, no further adjustments are required for distant operator. If communication is scratchy or TEST ALIGN meter for distant TD-204/U does not indicate hairline, do step 5.

5. Instruct distant operator to adjust the CRL control on panel 6A2 of the distant TD-204/U for center hairline indication on TEST ALIGN meter.
6. Set local TD-204/U TONE-OFF switch to OFF.
7. Do steps 3 through 6 while distant operator sends tone to local operator.

2-26. CIRCUIT ALINEMENT. (CONT)

ORDER WIRE FOR TD-754/G

Perform order wire checks and alinements with the distant operator.

1. Connect a handset or headset to the HEADSET receptacle.
2. Set TALK-OFF-SING switch to SIG, and then to TALK.
3. After communication is established through the link, operate METER SEL switch to SERV FAC on local and distant TD-754/G.
4. Operate SERV SEL switch to M on local TD-754/G.
5. Have distant operator operate SERV SEL switch to O.
6. Set TONE-OFF switch on panel 12A2 to TONE on the local TD-754/G.

NOTE

Local TD-754/G is sending tone to distant TD-754/G. If clear communication is established with distant operator or TEST ALIGN meter on distant TD-754/G indicates hairline, no further adjustments are required for the distant operator. If communication is scratchy or TEST ALIGN meter for distant TD-204/U does not indicate hairline, do step 7.

7. Adjust CRL potentiometer located on panel 12A3 of distant TD-754/G to hairline indicator on TEST ALIGN meter.
8. Do steps 3 through 7 while distant operator sends tone to local operator.

NOTE

Steps 9 through 12 are done only when the TD-754/G is used as an attended repeater station.

9. Set TONE switch on panel 12A2 to ON on adjacent TD-754/G.
10. Operate METER SEL switch to SERV FAC and SERV SEL switch to O on TD-754/G that is being alined.
11. Adjust PRL potentiometer on panel 12A2 for green band indication on TEST ALIGN meter for TD-754/G that is being alined.
12. Set TONE switch on panel 12A2 to OFF on adjacent TD-754/G.

2-26. CIRCUIT ALINEMENT. (CONT)

TD-660(*)/G CHANNEL GAIN ADJUSTMENT

NOTE

The operators of the TD-660(*)/G should contact each other by order wire to assure that they perform the gain level checks simultaneously. Each 11A5 panel in the TD-660(*)/G contains three channels. The channel numbers are stenciled on the perforated front cover.

1. Operate selector switch I to III on local and distant TD-660(*)/G.
2. Operate selector switch III to MEAS on local and distant TD-660(*)/Gs.
3. Set the 2 WIRE/4 WIRE switch to the position corresponding to the type of input (2 wire - 4 wire) to that particular channel when doing step 4.
4. Operate selector SW IV of local and distant TD-660(*)/Gs simultaneously to each channel position (1 thru 12) and check the TEST ALIGN meter for hairline indication.

NOTE

If TEST ALIGN meter does not indicate hairline for an associated channel, do step 5.

5. At each misadjusted or noisy channel, adjust the associated AG control on panels 11A5 for hairline indication on TEST ALIGN meter or anywhere in the green area for good speech quality.

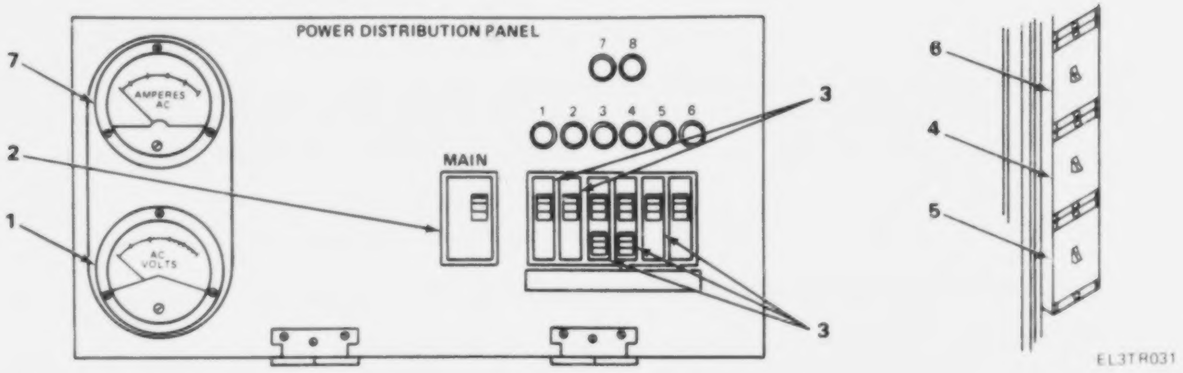
2-27. OPERATING PROCEDURES.

These procedures cover power turn-on and operating instructions for the following equipment:

Power turn-on procedure for AN/TCC-73(*) facility
Heater operation
Air conditioners
Exhaust blower operation
Signal Converter CV-1548(*)/G
Multiplexer TD-660(*)/G
Multiplexer TD-204/U
Multiplexer TD-754/G
Data Buffer TD-1065/G
Multiplexer TD-976/G
Multiplexer TD-1069/G
Switch box
Key Generator TSEC/KG-27
Intercommunication Station LS-147C/F1
Telephone Set TA-312/PT
Order wire communication
Monitoring channels

2-27. OPERATING PROCEDURES. (CONT)

POWER TURN-ON PROCEDURE FOR AN/TCC-73(*) FACILITY



1. Check that power distribution panel voltmeter (1) shows 115 ± 6 v.

NOTE

Power indicator neon light located on rear curbside entrance wall will also light when input power is applied.

2. Set MAIN circuit breaker (2) to ON.
3. Turn circuit breakers (3) 1 through 4, 7 and 8 to ON.

NOTE

Do not turn on SPARE circuit breaker 6.

Associated indicator lamp will light as circuit breaker is turned on.

4. Set LIGHT 1 switch (4) to ON.
5. Set LIGHT 2 switch (5) to ON.

NOTE

If temperature inside the facility is too low for the fluorescent lights to operate, set the INCANDESCENT COLD START light switch to ON.

When fluorescent lights come on, turn INCANDESCENT COLD START light switch to OFF.

6. Set BYPASS/BLACKOUT switch (6) as required.

2-27. OPERATING PROCEDURES. (CONT)

POWER TURN-ON PROCEDURE FOR AN/TCC-73(*) FACILITY (CONT)

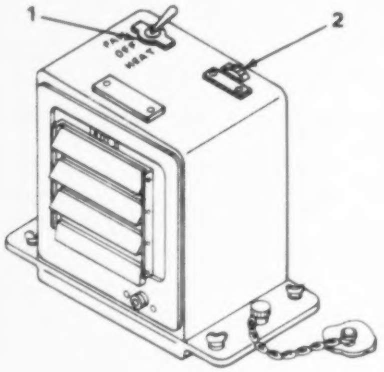
NOTE

In case of emergency, shut down facility by setting MAIN circuit breaker located on power distribution panel to OFF.

If the equipment is turned off by using the emergency stopping procedure, set all circuit breakers and equipment power switches to OFF before attempting to operate facility to avoid excessive initial current drain on the power source.

7. Check that less than 2 amps are indicated on ammeter (7).

HEATER OPERATION



TURN ON

NOTE

Check that MAIN circuit breaker and heater circuit breakers on the power distribution panel are set to ON and heater power plug is in heater receptacle.

1. Set HEAT-OFF-FAN switch (1) to HEAT.
2. Adjust TEMPERATURE control dial (2) for desired temperature.

NOTE

Adjust control dial to the left for lower temperatures, and to the right for higher temperatures.

TURN OFF

1. Adjust TEMPERATURE control dial (2) to lowest temperature.
2. Set HEAT-OFF-FAN switch (1) to OFF.

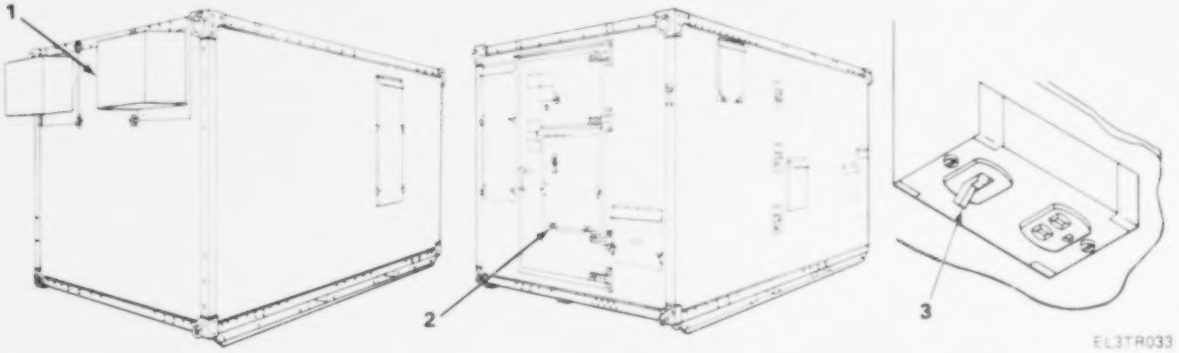
2-27. OPERATING PROCEDURES. (CONT)

AIR CONDITIONERS

NOTE

For installation procedures of air conditioner hardware kit, see paragraph 2-18.

EXHAUST BLOWER OPERATION



TURN ON

1. Open exhaust blower cover vents (1). Unlatch and slide open.
2. Open air filter vent cover (2).

NOTE

Air vents must be open before operating blowers.

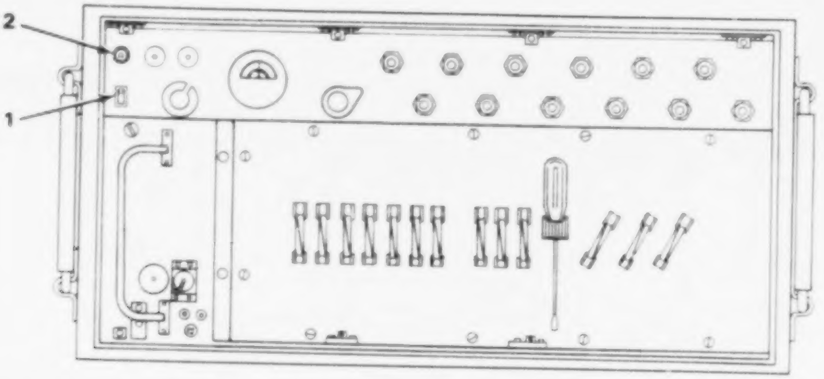
3. Set BLOWER switches (3) to ON.

TURN OFF

1. Set BLOWER 1 switch (3) to OFF.
2. Set BLOWER 2 switch (3) to OFF.

2-27. OPERATING PROCEDURES. (CONT)

SIGNAL CONVERTER CV-1548(*)/G

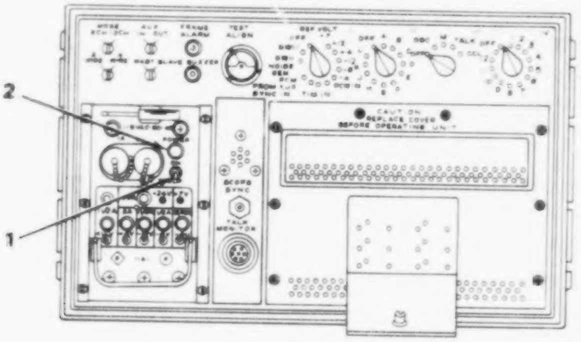


EL3TR252

1. Set POWER switch (1) to ON.

2. Check that POWER indicator lamp (2) is lit.

MULTIPLEXER TD-660(*)/G


2
1
MODE
ALM
FRAME ALARM
TEST
BUZZER
REF VOLT
OFF
TALK
CAUTION
REPLACE COVER
BEFORE OPERATING UNIT
SCOPE SYNC
TALK MONITOR
POWER

EL3TR253

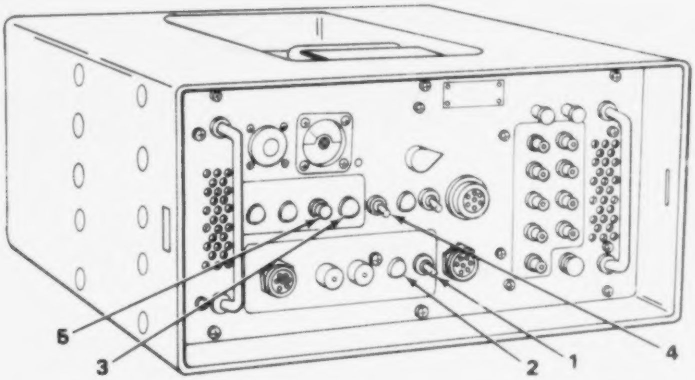
1. Set POWER switch (1) to ON.

2. Check that POWER indicator lamp (2) is lit.

3. Depress BUZZER OFF switch (3) to silence alarm.

2-27. OPERATING PROCEDURES. (CONT)

MULTIPLEXER TD-204/U



EL3TR129

Use either the TD-204/U or TD-754/G operating procedures according to which components are installed in the AN/TCC-73(*).

1. Set POWER switch (1) to ON.
2. Check that POWER indicator lamp (2) is lit.
3. Check that ALARMS NO CABLE CURRENT indicator lamp (3) is lit. Audible alarm will sound.

NOTE

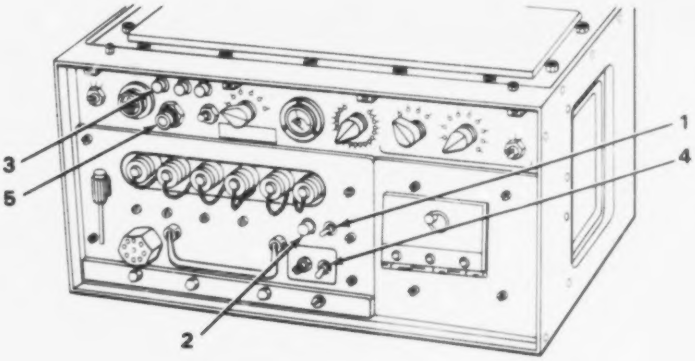
If TD-206/Gs are used, set the CABLE POWER switch (4) to ON.

4. Depress BUZZER OFF switch (5) to silence audible alarm.

NOTE

Depress BUZZER OFF switch on the TD-660(*)/G if the audible alarm sounds.

MULTIPLEXER TD-754/G



EL3TR132

2-27. OPERATING PROCEDURES. (CONT)

MULTIPLEXER TD-754/G (CONT)

1. Set POWER switch (1) to ON.
2. Check that POWER indicator lamp (2) is lit.
3. Check that CABLE CURRENT indicator lamp (3) is lit. Audible alarm will sound.

NOTE

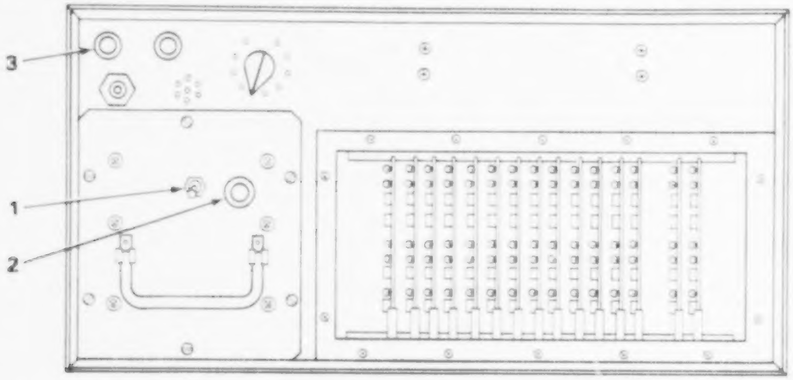
If TD-206/Gs are used, set the CABLE CURRENT switch (4) to ON.

4. Depress BUZZER OFF switch (5) to silence audible alarm.

NOTE

Depress the BUZZER OFF switch on the TD-660(*)/G if the audible alarm sounds.

DATA BUFFER TD-1065/G

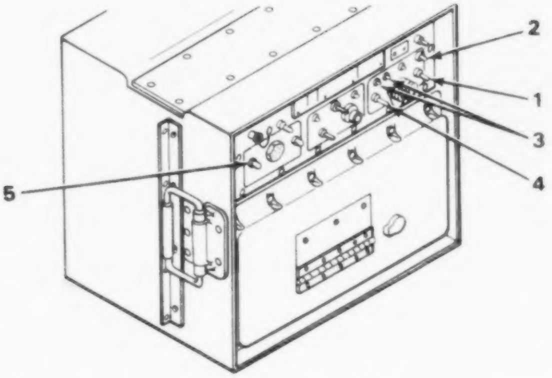


EL3TR254

1. Set POWER switch (1) to ON.
2. Check that POWER indicator lamp (2) is lit.
3. Depress BUZZER OFF switch (3) to silence audible alarm.

2-27. OPERATING PROCEDURES. (CONT)

MULTIPLEXER TD-976/G


2
1
3
4
5
EL3TR255

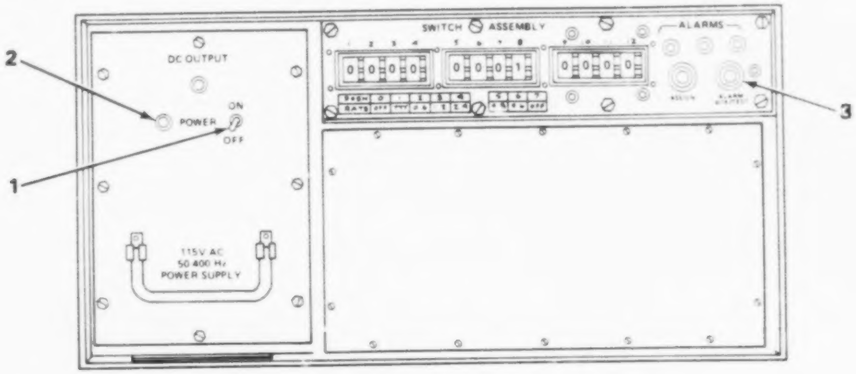
1. Set POWER switch (1) to ON.
2. Check that POWER indicator lamp (2) is lit.
3. Check that CABLE CURRENT indicator lamp (3) is lit.

NOTE

If TD-982/Gs are used, set CABLE CURRENT switch (4) to ON.

4. Depress BUZZER OFF switch (5) to silence audible alarm.

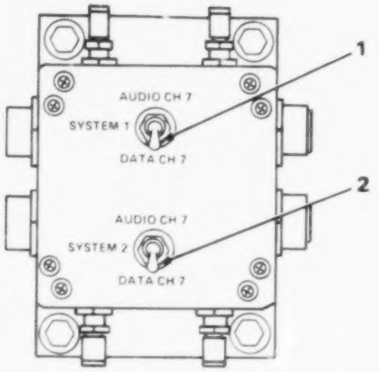
MULTIPLEXER TD-1069/G


2
DC OUTPUT
POWER
ON
OFF
1
115V AC
50 400 Hz
POWER SUPPLY
SWITCH ASSEMBLY
ALARMS
3
EL3TR256

1. Set POWER switch (1) to ON.
2. Check that POWER indicator lamp (2) is lit.
3. Depress ALARM ACK/TEST switch (3) to silence audible alarm.

2-27. OPERATING PROCEDURES. (CONT)

SWITCH BOX



EL3TR257

NOTE

The switch box provides access to channel 7 of systems 1 and 2 for the TD-1069/G. When system 1 or 2 of the TD-1069/G is used, the AUDIO/DATA switch must be set from AUDIO to DATA.

1. Set AUDIO/DATA switch (1) to DATA for operation of TD-1069/G system 1.
2. Set AUDIO/DATA switch (2) to DATA for operation of TD-1069/G system 2.

NOTE

The AUDIO/DATA switches must be set to AUDIO if a TD-1069/G is not used in systems 1 or 2.

KEY GENERATOR TSEC/KG-27

NOTE

Operational procedures for the TSEC/KG-27 are contained in the equipment KAM (appendix A).

1. Permuters must be set to proper setting. Permuter doors must be closed and securely fastened.

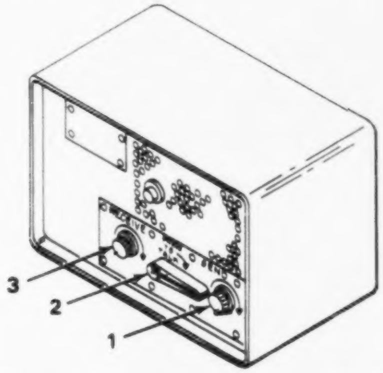
NOTE

The permuter must be reprogrammed if the permuter access door is opened after the permuters have been set and the doors have been closed. Opening the door will clear the programming.

2. Wait several seconds, until TD-660A/G FRAME/ALARM lamp goes out. Turn on TSEC/KG-27. ALARM lamp should still be out and system should now be operational.
3. For additional information on TSEC/KG-27 operation, refer to KAO-133( )/TSEC.

2-27. OPERATING PROCEDURES. (CONT)

INTERCOMMUNICATION STATION LS-147C/FI



EL3TR127

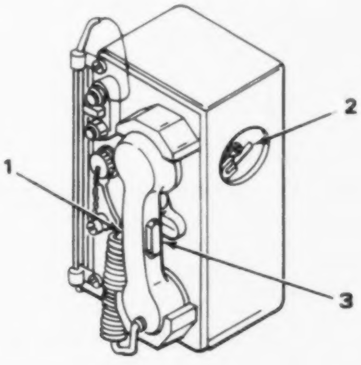
1. Connect power cord of LS-147C/FI to INTERCOM receptacle.
2. Connect wire pair next to LS-147C/FI to terminals on the rear.
3. Set OFF-SEND switch (1) to 5.
4. Hold PRESS TO TALK switch (2) and speak into speaker-microphone.

NOTE

The OFF-SEND switch does not have to be turned on to receive a call.

5. Set RECEIVE control switch (3) for proper volume on incoming calls.

TELEPHONE SET TA-312/PT

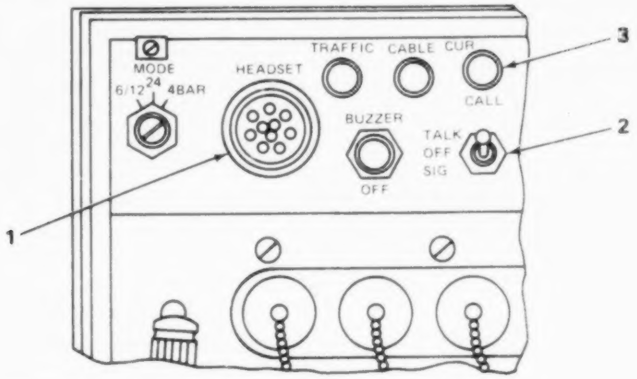


EL3TR128

1. Lift handset (1).
2. Crank handcrank (2) to signal distant station.
3. Depress press to talk switch (3) to talk and release switch to listen.

2-27. OPERATING PROCEDURES. (CONT)

ORDER WIRE COMMUNICATION



EL3TR130

This procedure applies to Multiplexers TD-204/U, TD-754/G, and TD-976/G.

MAKING A CALL

1. Connect a handset or headset to HEADSET receptacle (1).
2. Set TALK-OFF-SIG switch (2) to TALK.
3. Using handset or headset, check that order wire is not being used.

NOTE

For secure mode of operation, refer to TSEC/KG-27 KAM (appendix A).

4. Set TALK-OFF-SIG switch (2) to SIG for 2 seconds to signal distant operator.

NOTE

Codes are sometimes given to different facilities. These codes are sent by moving TALK-OFF-SIG switch between S/G and OFF positions.

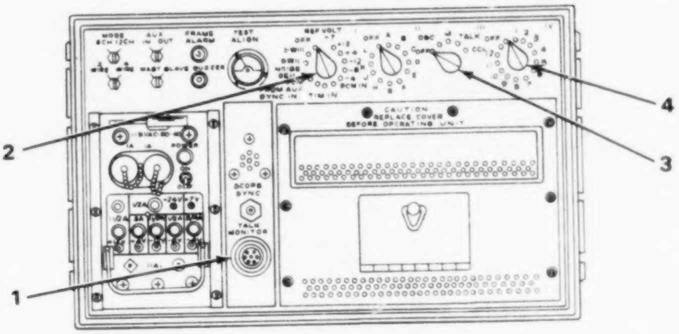
5. Set TALK-OFF-SIG switch (2) to TALK during conversation.
6. Set TALK-OFF-SIG switch (2) to OFF when conversation is finished.

RECEIVING A CALL

7. Pick up handset when signal indicator lamp (3) lights and audible alarm sounds.
8. Set TALK-OFF-SIG switch (2) to TALK.
9. Set TALK-OFF-SIG switch (2) to OFF when conversation is finished.

2-27. OPERATING PROCEDURES. (CONT)

MONITORING CHANNELS



EL3TR131

Monitoring channels is done on the TD-660(*)/G when in operation.

NOTE

For secure operations, refer to TSEC/KG-27 KAM (appendix A).

1. Connect a handset or headset to TALK MONITOR receptacle (1).
2. Set selector SW I (2) to SW III.
3. Set selector SW III (3) to TALK.
4. Set selector SW IV (4) to number of channel to be monitored.

2-28. SHUTDOWN PROCEDURES.

Perform shutdown procedures for the following components:

Signal Converter CV-1548(*)/G
Multiplexer TD-660(*)/G
Data Buffer TD-1065/G
Key Generator TSEC/KG-27
Multiplexer TD-204/U
Multiplexer TD-754/U
Multiplexer TD-976/G
Multiplexer TD-1069/G
Fluorescent Lights

Turn off all equipment power switches and equipment circuit breakers on all the above components.

Turn off all light switches and light circuit breakers.

2-29. PREPARATION FOR MOVEMENT.

Turn off all equipment power switches and circuit breakers, except LIGHT 1 and LIGHT 2 switches and the LIGHTS and MAIN circuit breakers. Secure all components in their cases, racks, mountings, or holders. Place all miscellaneous items in storage drawers and compartments for movement. Remove the batteries from the TA-312/PT and the flashlight for prolonged storage or for long distant shipment.

Disconnect power and signal cables from the signal entrance box and the power entrance box. Disconnect the 26-pair cables from the signal entrance box. Replace the covers on all connectors and receptacles. Close and secure the covers on the signal entrance box. Disconnect video cables from the video entrance box and wind onto cable reels.

NOTE

> If power was obtained from a generator, set circuit breaker on generator to OFF. Disconnect the power cable from the POWER 115V AC IN receptacle on the power entrance box. Replace both connector covers. Disconnect the power cable from the generator. Wind the cable onto the cable reel and store.
>
> If power was obtained from a commercial power source, turn off the power. Disconnect the power cable from the 115V AC IN receptacle on the power entrance box. Disconnect the power cable stub from the power cable source. Replace the covers, and wind the power cable onto the cable reel.

Disconnect the ground strap from the ground terminal in the power entrance box. Close and secure the cover on the power entrance box. Disconnect the ground strap from the generator set and from the ground rod. Store the ground straps in the storage compartments. Close and secure the cover on the air filter of the door.

If an air conditioner was installed, disconnect the air conditioner hoses, remove the air conditioner hardware and secure the covers on the air conditioner ducts. Store and secure the air conditioner hardware kits to the front wall of the facility in the mounting bracket. Remove the ground rods and secure them in the mounting brackets on the curbside wall up the terminal set. Roll up the floor mat, tie it securely, and store it between the desk and the TD-204/U or TD-754/G rack.

Unlock ladder latches and remove the ladder from the latch receptacles. Place the ladder on the blower box assemblies and secure with a strap to prevent damage to electronic equipment during movement.

NOTE

> If the facility is to be transported by aircraft, loosen the drain plug and the door vent cover to ensure equalization of pressure during transportation.

Make sure that the drain plug is tightly closed. Close and lock the door. If the facility is truck-mounted, secure the tailgate in the upright position.

Section IV OPERATION UNDER UNUSUAL CONDITIONS

Subject	Para	Page
General	2-30	2-84
Operation in Cold Climates	2-31	2-84
Operation in Hot, Dry Climates	2-32	2-84
Operation in Warm, Damp Climates	2-33	2-85

2-30. GENERAL.

The facility offers complete protection for all-weather operation. The following procedures must be observed when the facility is operated in unusual weather conditions.

2-31. OPERATION IN COLD CLIMATES.

Power cables are hard, brittle, and difficult to handle in extreme cold. Do not loop or kink cables when they are very cold. Looping and kinking may break wires and cables. Do not drag cable ends.

Be sure that covers are on all unused receptacles. This will keep snow, frost, and ice out. Also, put covers on power cables when not in use.

Keep snow and ice out of the power entrance box.

2-32. OPERATION IN HOT, DRY CLIMATES.

Special paint is used to lower the inside temperature when the shelter is in the sun. Before doing any touchup painting on the exterior, check for caution notice inside shelter door. Use only paint per MIL-E-46061 (MO) if you find a caution notice. Refer to TB 43-0118 for cleaning and refinishing instructions.

Dirt, sand, and dust can damage connectors, receptacles, and the power entrance box. Keep dirt, sand, and dust off these parts.

Keep air conditioner vents free of dust and dirt.

Do not drag cable ends through dust or sand.

Put covers on all receptacles and cables when not in use.

Heat may damage insulation on cables. Therefore, handle cables that have been in the sun with care. Repair or replace cables when bare wire is showing.

2-33. OPERATION IN WARM, DAMP CLIMATES.

Water and fungi can damage connectors, receptacles, and the power entrance box. Use a dry, lint-free cloth to clean these parts.

Do not drag power cables over the ground. Moisture and heat may damage cable insulation. Check all cables for blisters and corrosion. Remove corrosion when found. Fix blistered insulation with electrical tape.

Put covers on the ends of all cables and receptacles when not in use.

Keep air conditioner vents free of moisture, foliage, and fungi.

CHAPTER 3

OPERATOR MAINTENANCE

Subject	Section	Page
Lubrication	I	3-1
Operator Troubleshooting	II	3-1
Operator Maintenance Procedures	III	3-35

Section I LUBRICATION

3-1. LUBRICATION.

The facility requires lubrication of the entrance and cover door hinges, locks, and latches. Lubrication is performed once a month.

Lubricate door locks and latches using graphite aircraft grease (GGA). (See appendix E, item 3.)

Lubricate entrance door and cover hinges of the signal entrance boxes, video entrance boxes and power entrance box using a general purpose lubricating oil. (See appendix E, item 5.)

Section II OPERATOR TROUBLESHOOTING

Subject	Para	Page
General	3-2	3-1
Symptom Index		3-2
Troubleshooting Table		3-5
Loopback Checks	3-3	3-33
Multiplexer TD-660(*)/G Loopback	3-4	3-33
Multiplexer TD-204/U or TD-754/G Loopback	3-5	3-33
Cable Link Loopback	3-6	3-34

3-2. GENERAL.

System troubleshooting is based on symptoms that may occur when the facility is in operation as a cable terminal or cable repeater. A malfunction in an operating system may be discovered through the built-in alarms in the equipment or by a distant operator through order wire communications.

The troubleshooting table does not list all the problems which you may find. If your problem is not listed, or if the troubleshooting steps do not solve your problem, report your problems to a higher level of maintenance.

When working on any problem, be sure to report your work on the forms shown in TM 38-750.

To use the troubleshooting table, first find your problem in the symptom index. The symptom index is organized by components, and the problems associated with each component. The index will give you a page number on which you will find your problem and possible corrective action. Turn to that page, find your problem, and use the procedures to correct it.

For operator troubleshooting of communication equipment, refer to paragraph 2-8 for preliminary checks and adjustments. Perform checks and adjustments given. If equipment does not perform properly, report to a higher level of maintenance.

SYMPTOM INDEX

Page

FACILITY

EQUIPMENT
  Equipment on curbside wall fails to operate 3-6
  Equipment on roadside wall fails to operate 3-6

EXHAUST BLOWERS
  Fail to operate 3-6

FLUORESCENT AND INCANDESCENT CEILING LIGHTS
  Fail to light 3-5
  Curbside fluorescent lights do not light 3-5
  Roadside fluorescent lights do not light 3-5

HEATERS
  Heater No. 1 and No. 2 fail to operate 3-6

INTERCOM AND CONVENIENCE RECEPTACLES
  No ac power available 3-6

LS-147(C)/FI
  Does not operate 3-7

POWER DISTRIBUTION PANEL
  Glow lamp
    Fails to light 3-5

POWER INDICATOR LAMP
  Fails to light
    AC VOLTS meter indicates normal 3-5

TA-312/PT
  Local communications not available 3-7

12-CHANNEL CABLE TERMINAL (FRAME ALARMS)

  A malfunction occurs when operating facility as a 12-channel cable terminal 3-8

  A malfunction occurs on systems 1 or 2 channel 7 with TD-1069/G installed in a 12/24-channel system 3-10

24-CHANNEL CABLE TERMINAL (FRAME ALARMS)

  A malfunction occurs when operating facility as a 24-channel cable terminal 3-11

SYMPTOM INDEX (CONT)

Page

48/96-CHANNEL CABLE TERMINAL (FRAME ALARMS)

A malfunction occurs when operating facility as a 48/96-channel cable terminal 3-13

12/24-CHANNEL REPEATER TERMINAL (FRAME ALARMS)

A malfunction occurs when operating facility as a 12/24-channel repeater terminal 3-15

24-CHANNEL REPEATER TERMINAL WITH 12-CHANNEL DROP AND INSERT (FRAME ALARMS)

A malfunction occurs when operating the facility as a 24-channel repeater with 12-channel drop and insert 3-16

CABLE LINK

Order wire available with no pcm or shorted transmission cable 3-17

Order wire available with pcm out of frame or noise on all channels 3-19

No order wire or pcm available 3-20

Order wire available with no pcm or shorted transmission cable (TD-976/G) 3-21

CABLE

TD-660(*)/G TEST ALIGN meter fails to indicate in green band when selector switch I is set to PCM IN 3-23

TD-660(*)/G TEST ALIGN meter fails to indicate in green band when selector switch I is set to TIM IN 3-23

Slave TD-660(*)/G TEST ALIGN meter fails to indicate in green band when selector switch I is set to SYNC IN (24-channel operation) 3-24

Intermittent FRAME ALARM indicator on slave TD-660(*)/G in 24-channel operation 3-24

TD-754/G TEST ALIGN meter fails to indicate in green band when METER SEL switch is set to TIM IN 3-24

TD-754/G TEST ALIGN meter fails to indicate in green band when METER SEL switch is set to PCM IN-1 3-25

TD-754/G TEST ALIGN meter fails to indicate in green band when METER SEL switch is set to PCM IN-2 (24-channel operation) 3-25

One or more TD-976/G INPUT ALARMS (1 thru 8) light and audible alarm sounds 3-25

SYMPTOM INDEX (CONT)

Page

CABLE (CONT)

Distant operator indicates loss of one group of four channels on the TD-1069/G (system 1 or 2). All other indications are normal 3-26

Distant operator indicates loss of channel 7 on system 1 or 2 with TD-1069/G installed 3-26

Local operator indicates loss of channel 7 on system 1 or 2 with TD-1069/G installed 3-26

Switchboard operator indicates loss of one group of four channels. All local indications are normal 3-26

Switchboard operator reports that no signaling is available on any 2-wire channel 3-27

Switchboard operator indicates loss of a specific channel or only one-way communication on a specific channel. All local indications are normal 3-27

Through order wire communications not available but all other indications are normal 3-27

KEY GENERATOR TSEC/KG-27

Local switchboard operator indicates a malfunction or distant operator indicates that distant TD-660A/G is in alarm. Local TSEC/KG-27 and TD-660A/G is operating normally 3-28

TSEC/KG-27 and/or TD-660A/G are in alarm 3-30

OPERATOR TROUBLESHOOTING

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

FACILITY

1. Power indication neon lamp fails to light when power is applied to the facility. AC VOLTS meter does not show a voltage indication.

    Check that power cable is not damaged and is properly connected to POWER 115V AC in receptacle J1 and to power source.

        Connect properly. If problem continues, report to a higher level of maintenance.

2. Power indicator neon lamp fails to light when power is applied to the facility. AC VOLTS meter indicates normal with MAIN circuit breaker set to ON.

    Check for bad power indicator lamp.

        If lamp is bad, replace. See paragraph 3-9.

3. Glow lamp fails to glow on power distribution panel when associated circuit breaker is set to ON.

    Check for bad glow lamp.

        If glow lamp is bad, replace. See paragraph 3-10.

4. Fluorescent and incandescent ceiling lights do not light when LIGHTS 1 and 2 and INCANDESCENT COLD-START light switches are set to ON. BYPASS-BLACKOUT switch is set to BLACKOUT. MAIN and LIGHTS circuit breakers are set to ON. Power is available in the facility.

    Check that door is closed.

        If door is open, close.

5. Fluorescent ceiling lights do not light when LIGHT 1 or LIGHT 2 switch is set to ON.

    Check that LIGHTS circuit breaker is set to ON.

        If LIGHTS circuit breaker is set to OFF, set to ON.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

FACILITY (CONT)

6. Exhaust blowers fail to operate when BLOWER switches are set to ON. MAIN circuit breaker is set to ON.

Step 1. Check that each blower is plugged into blower receptacles.

If blowers are not plugged into blower receptacles, plug in.

Step 2. Check that BLOWERS circuit breaker is set to ON.

If BLOWERS circuit breaker is set to OFF, set to ON.

7. Heater No. 1 or No. 2 fails to operate and MAIN circuit breaker is set to ON.

Step 1. Check that HTR ^{3} 1 or HTR ^{3} 2 circuit breaker is set to ON.

If HTR ^{3} 1 or HTR ^{3} 2 circuit breaker is set to OFF, set to ON.

Step 2. Check that heater No. 1 and heater No. 2 power connectors are inserted in the HEATER receptacles.

If heater No. 1 and heater No. 2 power connector is not inserted in receptacle, insert.

8. Equipment in racks on roadside wall fails to operate.

Check that EQUIP 1 circuit breaker is set to ON.

If EQUIP 1 circuit breaker is set to OFF, set to ON.

9. Equipment in racks on curbside wall fails to operate.

Check that EQUIP 2 circuit breaker is set to ON.

If EQUIP 2 circuit breaker is set to OFF, set to ON.

10. No ac power available at INTERCOM and CONVENIENCE receptacles.

Check that CONV circuit breaker is set to ON.

If CONV circuit breaker is set to OFF, set to ON.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION

TEST OR INSPECTION

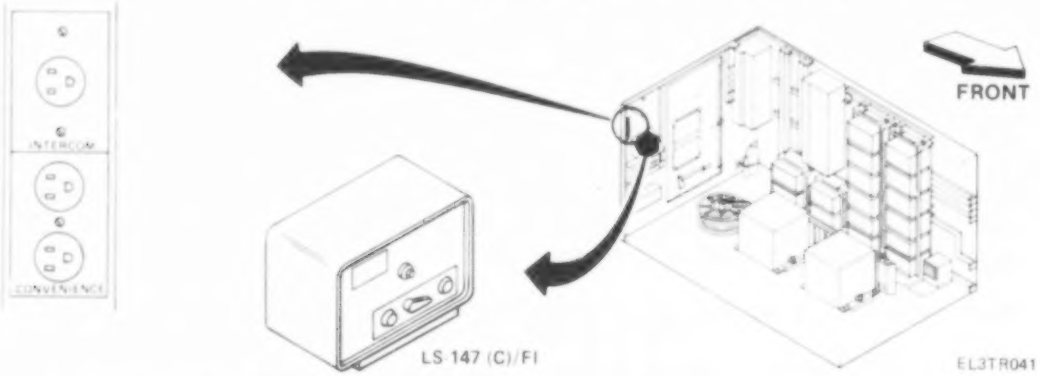
CORRECTIVE ACTION

FACILITY (CONT)

11. LS-147(C)/FI does not operate. AC power is available at convenience receptacles.

Check that LS-147(C)/FI is plugged into INTERCOM receptacle.

If LS-147(C)/FI is unplugged, plug into INTERCOM receptacle.



12. Local communications not available with TA-312/PT.

Step 1. Check that batteries are installed in battery case.

If batteries are not installed, install two BA-30 batteries in battery case.

Step 2. Check that the wire pair adjacent to the TA-312/PT is connected to the binding posts on TA-312/PT.

If the wire pair is not connected to the binding posts on TA-312/PT, connect wire pair.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

FACILITY (CONT)

NOTE

The AN/TCC-73(*) always operates in a secure mode of operation. Always convert the facility to a nonsecure mode of operation before troubleshooting a system. If the malfunction disappears when converted to a nonsecure mode of operation, the problem exists in the TSEC/KG-27 equipment. Refer to TSEC/KG-27 troubleshooting.

Always isolate the malfunction to a system, and then a component in operation. To prevent unnecessary downtime, patch a system not in use into operation and install the corresponding cabling. If a system configuration does not contain a component, proceed to the next step.

Always communicate with distant operator through order wire communications to determine whether a fault is local or distant. When order wire communications are not in use, use local communications as applicable.

The TD-204/U can be substituted for the TD-754/G in all troubleshooting procedures.

When the TD-1065/G is turned off, it allows all signals to be bypassed through it. If a problem goes away when the TD-1065/G is turned off, this means the problem is in the TD-1065/G or interconnecting cables. If the problem still exists when the TD-1065/G is turned off, this means that the TD-1065/G and interconnecting cables are good.

12-CHANNEL CABLE TERMINAL (FRAME ALARMS)

NOTE

Refer to 12-channel block diagram, paragraph 1-18, to aid in troubleshooting.

1. A malfunction occurs when operating facility as a 12-channel cable terminal.

Step 1. Call distant operator on order wire communications to check if distant terminal has a problem.

If distant terminal is operating normally or has a problem, have distant operator stand by. Go to step 2.

Step 2. Perform a loopback test on TD-754/G. See paragraph 3-5.

a. If problem is corrected, call distant terminal and request loopback on their TD-754/G.

b. If problem is corrected at distant terminal after loopback test, refer to cable link troubleshooting.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

12-CHANNEL CABLE TERMINAL (FRAME ALARMS) (CONT)

c. If problem persists, go to step 3.

Step 3. Perform a loopback test on TD-660(*)/G. See paragraph 3-4.

a. If problem persists, go to step 4.

b. If problem is corrected, perform a systems self-test on TD-754/G. See paragraph 2-24.

c. If systems self-test does not solve the problem, refer to cable troubleshooting.

d. If cable troubleshooting does not solve the problem, replace the defective TD-754/G.

Step 4. Turn off the TD-1065/G.

a. If problem is corrected, go to step 5.

b. If problem persists, perform a systems self-test on the TD-660(*)/G. See paragraph 2-24.

c. If systems self-test does not solve the problem, refer to cable troubleshooting.

d. If cable troubleshooting does not solve the problem, go to step 6.

Step 5. Perform a systems self-test on the TD-1065/G. See paragraph 2-24.

a. If systems self-test does not solve the problem, refer to cable troubleshooting.

b. If cable troubleshooting does not solve the problem, replace defective TD-1065/G.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

12-CHANNEL CABLE TERMINAL (FRAME ALARMS) (CONT)

Step 6. Perform a systems self-test on the CV-1548(*)/G. See paragraph 2-24.

a. If a systems self-test does not solve the problem, refer to cable troubleshooting.

b. If cable troubleshooting does not solve the problem, replace the defective CV-1548(*)/G.

c. If replacement of CV-1548(*)/G does not solve the problem, replace the defective TD-660(*)/G.

2. A malfunction occurs on systems 1 or 2 channel 7 with TD-1069/G installed in a 12/24-channel system.

Step 1. Check that switch box AUDIO/DATA switch is set to DATA.

Step 2. Call distant operator on order wire communications to check if distant terminal has a problem.

If distant terminal is operating normally or has a problem, have distant operator stand by. Go to step 3.

Step 3. Perform a loopback test on the TD-1069/G.

a. Remove front cover.

b. Set LOOPBACK switch on circuit card A4 to ON.

c. If problem is corrected at distant terminal, refer to 12- or 24-channel troubleshooting.

d. If problem is corrected at local and distant terminal, replace defective TD-1069/G.

e. If problem persists, perform a systems self-test on the TD-1069/G. See paragraph 2-24.

f. If systems self-test does not solve the problem, refer to cable troubleshooting.

g. If cable troubleshooting does not solve the problem, replace the defective TD-1069/G.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

24-CHANNEL CABLE TERMINAL (FRAME ALARMS)

NOTE

Refer to 24-channel block diagram, paragraph 1-18, to aid in troubleshooting.

A malfunction occurs when operating the facility as a 24-channel cable terminal.

Step 1. Call distant operator on order wire communications to check if distant terminal has a problem.

If distant terminal is operating normally or has a problem, have distant operator stand by. Go to step 2.

Step 2. Perform a loopback test on TD-754/G. See paragraph 3-5.

a. If problem persists, go to step 3.

b. If problem is corrected, call distant terminal and request loopback on their TD-754/G.

c. If distant terminal has no problem after loopback test, refer to cable link troubleshooting.

Step 3. Separate 24-channel system.

a. Set MODE switch on TD-754/G to 6/12.

b. Set MASTER/SLAVE switch on slave TD-660(*)/G to MASTER on system 2.

c. Remove SYNC patch cord from patch panel.

d. Remove the PCM IN, PCM OUT, and TIM IN patch cords from the TD-660(*)/G side of patch panel (system 2).

Step 4. Perform a loopback test on TD-754/G for system 1. See paragraph 3-5.

a. If problem is corrected, go to step 5.

b. If problem persists, go to step 7.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

24-CHANNEL CABLE TERMINAL (FRAME ALARMS) (CONT)

Step 5. Connect TD-660(*)/G system 2 to TD-754/G.

a. Remove the PCM OUT, PCM IN, TIM OUT, and TIM IN patch cords from the TD-660(*)/G side of patch panel (system 1).

b. Install patch cords removed in *a* to system 2 TD-660(*)/G.

Step 6. Perform a loopback test on TD-754/G for system 2. See paragraph 3-5.

If problem persists, go to step 7.

Step 7. Perform a loopback test on TD-660(*)/G. See paragraph 3-4.

a. If problem persists, go to step 8.

b. If problem is corrected, perform a systems self-test on TD-754/G. See paragraph 2-24.

c. If systems self-test does not solve the problem, refer to cable troubleshooting for TD-754/G.

d. If cable troubleshooting does not solve the problem, replace the defective TD-754/G.

Step 8. Turn the TD-1065/G off.

a. If problem is corrected, go to step 9.

b. If problem persists, perform a systems self-test on the TD-660(*)/G. See paragraph 2-24.

c. If systems self-test does not solve the problem, refer to cable troubleshooting.

d. If cable troubleshooting does not solve the problem, go to step 10.

Step 9. Perform a systems self-test on the TD-1065/G. See paragraph 2-24.

a. If systems self-test does not solve the problem, refer to cable troubleshooting.

b. If cable troubleshooting does not solve the problem, replace defective TD-1065/G.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

24-CHANNEL CABLE TERMINAL (FRAME ALARMS) (CONT)

Step 10. Perform a systems self-test on the CV-1548(*)/G. See paragraph 2-24.

a. If a systems self-test does not solve the problem, refer to cable troubleshooting.

b. If cable troubleshooting does not solve the problem, replace the defective CV-1548(*)/G.

c. If replacement of CV-1548(*)/G does not solve the problem, replace the defective TD-660(*)/G.

48/96-CHANNEL CABLE TERMINAL (FRAME ALARMS)

NOTE

Refer to 48/96-channel block diagrams in paragraph 1-18 to aid in troubleshooting.

A malfunction occurs when operating facility as a 48/96-channel cable terminal.

Step 1. Call distant operator on order wire communications to check if distant terminal has a problem.

If distant terminal is operating normally or has a problem, have distant operator stand by. Go to step 2.

Step 2. Set the LOOPBACK switch on the TD-976/G to ON.

a. If problem is corrected, call distant terminal and request loopback on their TD-976/G.

b. If problem at distant terminal is corrected after loopback test, refer to cable link troubleshooting.

c. If problem persists, go to step 3.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

48/96-CHANNEL CABLE TERMINAL (FRAME ALARMS) (CONT)

Step 3. Perform a loopback test for each TD-754/G used in the 48/96-channel system. See paragraph 3-5.

a. If four TD-754/Gs are used to make up a 48-channel system and all four frames when looped back, refer to TM 11-7025-202-12 for TD-976/G troubleshooting.

b. If problem persists on any TD-754/G, perform a systems self-test. See paragraph 2-24.

c. If a systems self-test does not solve the problem, refer to cable troubleshooting.

d. If cable troubleshooting does not solve the problem, replace the defective TD-754/G.

Step 4. Perform a loopback for each TD-660(*)/G used in the 48/96-channel system. See paragraph 3-4.

a. If there is no problem in any of the systems (1 thru 4 or 1 thru 8) after each TD-660(*)/G is looped back, go to step 5.

b. If there is a problem in any one of the systems (1 thru 4 or 1 thru 8) after a TD-660(*)/G is looped back, go to step 6.

Step 5. Refer to TM 11-7025-202-12 for troubleshooting the TD-976/G.

Step 6. Turn off the TD-1065/G.

a. If problem is corrected, go to step 7.

b. If problem persists, perform a systems self-test on the TD-660(*)/G. See paragraph 2-24.

c. If systems self-test does not solve the problem, refer to cable troubleshooting.

d. If cable troubleshooting does not solve the problem, go to step 8.

Step 7. Perform a systems self-test on the TD-1065/G. See paragraph 2-24.

a. If systems self-test does not solve the problem, refer to cable troubleshooting.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

48/96-CHANNEL CABLE TERMINAL (FRAME ALARMS) (CONT)

b. If cable troubleshooting does not solve the problem, replace defective TD-1065/G.

Step 8. Perform a systems self-test on each CV-1548(*)/G. See paragraph 2-24.

a. If a systems self-test does not solve the problem, refer to cable troubleshooting.

b. If cable troubleshooting does not solve the problem, replace the defective CV-1548(*)/G.

c. If replacement of CV-1548(*)/G does not solve the problem, replace the defective TD-660(*)/G.

12/24-CHANNEL REPEATER TERMINAL (FRAME ALARMS)

NOTE

Refer to 12/24-channel cable repeater block diagram, paragraph 1-18, to aid in troubleshooting. Systems 1 or 2 are used.

A malfunction occurs when operating the facility as a 12/24-channel repeater terminal.

Step 1. Call distant terminal on order wire communications to check if distant terminal has a problem.

If distant terminal is operating normally or has a problem, have distant operator stand by. Go to step 2.

Step 2. Perform a loopback test on system 1 and system 2 TD-754/G. See paragraph 3-6.

a. If problem is corrected at either TD-754/G, call distant terminal and request loopback on their TD-754/G.

b. If problem is corrected at distant terminal after loopback test, refer to cable link troubleshooting.

c. If problem persists, go to step 3.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

12/24-CHANNEL REPEATER TERMINAL (FRAME ALARMS) (CONT)

Step 3. Perform a loopback test for each TD-754/G. See paragraph 3-5.

a. Remove TD-204 or TD-754 system 1 and system 2 (PCM OUT, PCM IN, TIM OUT, TIM IN) patch cords from patch panel.

b. Remove ORDER WIRE PATCH cord.

c. Install a patch cord in system 1 TD-204 or TD-754 PCM OUT and PCM IN.

d. Install a patch cord in system 1 TD-204 or TD-754 TIM OUT and TIM IN.

e. Repeat steps b and c for system 2 TD-204 or TD-754.

f. If system 1 TD-754 or system 2 TD-754 does not frame, perform a systems self-test. See paragraph 2-24.

g. If systems self-test does not solve the problem, refer to cable troubleshooting.

h. If cable troubleshooting does not solve the problem, replace defective TD-754/G.

24-CHANNEL REPEATER TERMINAL WITH 12-CHANNEL DROP AND INSERT (FRAME ALARMS)

NOTE

Refer to 24-channel repeater with 12-channel drop and insert block diagram, paragraph 1-18, to aid in troubleshooting. Systems 1 and 2 are used.

A malfunction occurs when operating the facility as a 24-channel repeater with 12-channel drop and insert.

Step 1. Call distant operator on order wire communications to check if distant terminal has a problem.

If distant terminal is operating normally or has a problem, have distant operator stand by. Go to step 2.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

24-CHANNEL REPEATER TERMINAL WITH 12-CHANNEL DROP AND INSERT (FRAME ALARMS) (CONT)

Step 2. Perform a loopback test on system 1 and system 2 TD-754/Gs.

a. Remove the four patch cords from CABLE PATCH system 1 and 2.

b. Install patch cord in system 1 TD-204 or TD-754 TO CABLE and system 2 TD-204 or TD-754 TO CABLE.

c. Install patch cord in system 1 TD-204 or TD-754 FROM CABLE and system 2 TD-204 or TD-754 FROM CABLE.

d. If system 1 and 2 problems are corrected, call distant terminals and request loopback on TD-754/G.

e. If problem is corrected at distant terminal after loopback test, refer to cable link troubleshooting.

f. If problem persists, go to step 3.

Step 3. Remove the following patch cords from patch panel.

a. Remove the two SYNC patch cords from the patch panel.

b. Remove ALT PCM OUT system 1 and 2 patch cords from patch panel.

c. Remove XMIT TIM OUT system 2 patch cord from patch panel.

d. Remove TO CABLE and FROM CABLE from system 2 CABLE PATCH.

e. Refer to 24-channel cable terminal troubleshooting.

CABLE LINK

NOTE

Cable link troubleshooting for the TD-204/U and TD-754/G are given in the following procedures.

1. Order wire available with no pcm or shorted transmission cable.

Step 1. Disconnect the cable from the PCM IN-1 connector of the TD-204/U or TD-754/G.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE LINK (CONT)

Step 2. Operate the METER SELECT switch of the TD-204/U or TD-754/G to SERV FAC.

Step 3. Loosen the front panel screws on the TD-204/U, press the PUSH TO RELEASE CHASSIS button, and pull the front panel forward.

Step 4. Operate the SERV SEL switch of the TD-204/U to R (FL on TD-754/G).

Step 5. Operate the NORM OPR-ZERO SET-READ switch of the TD-204/U or TD-754/G to ZERO SET.

Step 6. Adjust to ZERO SET control for a center hairline indication on the TEST ALIGN meter.

Step 7. Operate the NORM OPR-ZERO SET-READ switch of the TD-204/U or TD-754/G to READ.

Step 8. Operate the SYSTEM FAULT LOCATOR MILES switches of the TD-204/U or TD-754/G for a center hairline indication on the TEST ALIGN meter (as close as possible).

Step 9. From the positions of the SYSTEM FAULT LOCATOR MILES switches, determine the number of good TD-206/Gs between the TD-204/Us or TD-754/Gs and the defective cable section or TD-206/G.

Step 10. Operate the SYSTEM FAULT LOCATOR MILES switches of the TD-204/U or TD-754/G to 0 and the NORM OPR-ZERO SET READ switch to NORM OPR.

Step 11. Slide the front panel of the TD-204/U back until it locks into place and tighten the front panel screws.

Step 12. Operate the CABLE POWER switch of the TD-204/U or CABLE CURRENT switch of TD-754/G at each end of the cable link to OFF.

Step 13. Send a lineperson out to troubleshoot with the AN/PTM-7.

WARNING

Do not operate the CABLE POWER switch of the TD-204/U or the CABLE CURRENT switch of the TD-754/G to ON at either end of the cable link unless requested by the lineperson. If the CABLE POWER or CABLE CURRENT switch is operated to ON, voltages as high as 1,100 volts may be present in the transmission cable.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE LINK (CONT)

Coordinate with the lineperson to troubleshoot, and make the necessary replacements (cable section or TD-206/G).

2. Order wire available with pcm out of frame or noise on all channels.

Step 1. Operate the CABLE POWER switch of the TD-204/U or CABLE CURRENT switch of the TD-754/G at each end of cable link to OFF.

WARNING

Do not operate the CABLE POWER switch of the TD-204/U or the CABLE CURRENT switch of the TD-204/U to ON at either end of the cable link unless requested by the lineperson. If the CABLE POWER or CABLE CURRENT switch is operated to ON, voltages as high as 1,100 volts may be present in the transmission cable.

Step 2. Send a lineperson out to the TD-206/G at the midpoint in the cable link with the AN/PTM-7, and give instructions to connect into the cable link.

Step 3. When order wire is established with the lineperson, give instructions to perform the loopback check with the AN/PTM-7.

Step 4. Operate the CABLE POWER or CABLE CURRENT switch to ON at both ends of the cable link, and check to see which end of the cable link has a FRAME ALARM indicator lighted on the TD-660A/G for the associated terminal or noise on all channels.

Step 5. When the indications are obtained, operate the CABLE POWER switch on the TD-204/U or CABLE CURRENT switch of the TD-754/G at each end of the link to OFF.

Step 6. Instruct the lineperson to substitute another TD-206/G in the cable link. When the substitution is complete, operate the CABLE POWER or CABLE CURRENT switches to ON and check if the trouble still exists.

Step 7. If the trouble is not corrected, instruct the lineperson to replace the original TD-206/G in the cable link and proceed to a TD-206/G halfway between the lineperson's position and the end of the cable link that reported a frame alarm or noise on all channels during the first loopback check in step 4.

Perform the procedures in steps 3 through 6 above at the next TD-106/G.

If the trouble is not corrected, instruct lineperson to replace the original TD-206/G and continue the troubleshooting procedure until the defective TD-206/G is located.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE LINK (CONT)

3. No order wire or pcm available.

NOTE

If the ALARMS NO CABLE CURRENT indicator of the TD-204/U or CABLE CURRENT indicator of the TD-754/G remains extinguished after the CABLE POWER or CABLE CURRENT switch is operated to OFF then to ON, the transmission cable is shorted. Do malfunction 1 in cable link troubleshooting to locate the shorted cable section. When the ALARMS NO CABLE CURRENT indicator of the TD-204/U or CABLE CURRENT indicator of the TD-754/G immediately lights after the CABLE POWER or CABLE CURRENT switch is operated to OFF and then ON, the transmission cable is open. Perform the procedures given in steps 1 through 5 to locate the defective cable section.

Step 1. Operate the CABLE POWER switch of the TD-204/U or CABLE CURRENT switch of the TD-754/G to OFF.

Step 2. Disconnect the cable from the TO CABLE connector of the TD-204/U or TD-754/G and connect it to test set TS-27B/TSM.

Step 3. Measure the capacitance of the cable with the TS-27B/TSM and translate the indication into the distance to the fault using capacitance curve on page 3-21.

Step 4. If the indicated distance exceeds 10 miles, send a lineperson out to the 10-mile point to repeat the measurements.

Step 5. Instruct the lineperson to use the AN/PTM-7 at the cable connection nearest the fault to locate the distance to the fault.

NOTE

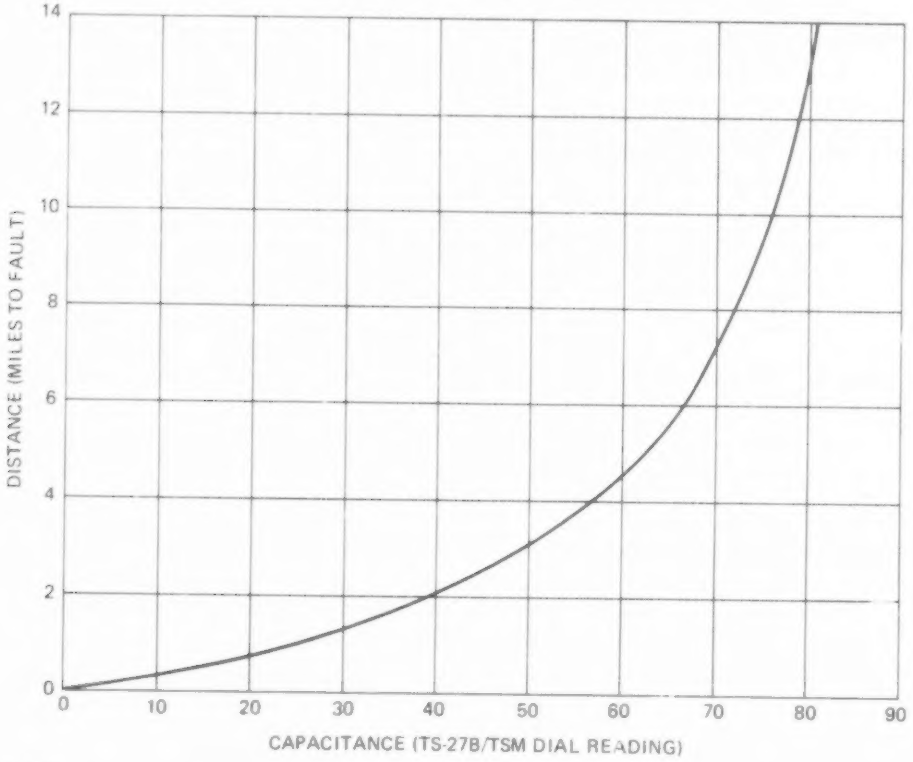
When the fault is located in a section of the cable link where two cable sections join, use the AN/PTM-7 order wire facility to determine which cable section is at fault.

Repair or replace section as necessary.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE LINK (CONT)



NOTE:
CURVE ASSUMES TD-206/G's ARE CONNECTED
AT ONE MILE INTERVALS IN THE CABLE.

CX-4245/G OR CX-11230/G TRANSMISSION CABLE
CAPACITANCE-DISTANCE CURVE FOR USE WITH TEST SET TS-278/TSM.

EL3TR263

NOTE

Cable link troubleshooting for the TD-976/G is given in the following procedure. Test the overall cable link as instructed in steps 1 through 18 below.

4. Order wire available with no pcm or shorted transmission cable (TD-976/G).

Step 1. Connect handset to HANDSET connector on front panel of TD-976/G.

Step 2. Set VOICE O.W. SELECT switch to CABLE.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE LINK (CONT)

Step 3. Set VOICE O.W. TALK/LISTEN-OFF-RING switch to RING momentarily, then to TALK/LISTEN.

Step 4. When distant operator answers, determine the type of equipment being used to interface with local TD-976/G.

a. If distant equipment is another TD-976/G, go to step 5.

b. If distant equipment is an AN/GRC-144 radio set, go to step 6.

c. If distant equipment is a TD-1147/TSC, go to step 7.

Step 5. Instruct distant operator to set TD-976/G switches as follows:

a. Set POWER CABLE switch to OFF.

b. Set CABLE TEST switch to OFF.

c. Set DIGITAL LOOPBACK switch to ON.

Step 6. Instruct distant operator to set AN/GRC-144 CABLE LOOP TEST switch to TEST. Go to step 8.

Step 7. Instruct distant operator to place TD-1147/TSC in the LOOP TEST operating mode. Go to step 8.

Step 8. Set local TD-976/G POWER CABLE switch to ON and observe that POWER IN and POWER OUT indicators are lit.

Step 9. Set local CABLE TEST switch to ON.

Step 10. Wait approximately 30 seconds and then observe combination of CABLE FAULT indicators (16, 8, 4, 2, and 1) that are lit.

Step 11. Determine from system planning, the quantity of TD-982/GS pulse form restorers in the cable link.

Step 12. Refer to CABLE FAULT DETECTION chart on TD-976/G front cover and match the combination of CABLE FAULT indicators observed in step 10 to the INDICATION portion (16, 8, 4, 2, 1) of the CABLE FAULT DETECTION chart.

Step 13. Refer to CABLE FAULT DETECTION chart and match the number of TD-982/G pulse form restorers determined in step 11 to the RESTORERS IN CABLE SYSTEM portion of the CABLE FAULT DETECTION chart.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE LINK (CONT)

Step 14. Trace downward in the applicable column (1 thru 9) determined in step 11 until reaching the entry in the INDICATION column.

Step 15. If the entry is OK, the cable system is operational. If the entry is a number, the cable system is nonoperational and the entry number identifies the faulty TD-982/G or portion of the cable link that is bad.

Step 16. Refer to TM 11-7025-202-12 for replacement of TD-982/G.

Step 17. Set local CABLE TEST switch to OFF.

Step 18. Set local POWER CABLE switch to OFF.

CABLE

1. TD-660(*)/G TEST ALIGN meter fails to indicate in green band when selector switch I is set to PCM IN.

Step 1. Check that associated PCM IN cable is properly connected to PCM IN receptacle.

Repair or replace as necessary.

Step 2. Check for defective PCM IN cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

2. TD-660(*)/G TEST ALIGN meter fails to indicate in green band when selector switch I is set to TIM IN.

Step 1. Check that associated TIM IN cable is properly connected to TIM IN receptacle.

Repair or replace as necessary.

Step 2. Check for defective TIM IN cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE (CONT)

3. Slave TD-660(*)/G TEST ALIGN meter fails to indicate in green band when selector switch I is at SYNC IN (24-channel operation).

Step 1. Check that associated SYNC IN cable is properly connected to SYNC IN receptacle.

Repair or replace as necessary.

Step 2. Check for defective SYNC IN cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

4. Intermittent FRAME ALARM indicator on slave TD-660(*)/G in 24-channel operation.

Step 1. Check for defective SYNC cable. See paragraph 4-22.

Repair or replace as necessary.

Step 2. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

5. TD-754/G TEST ALIGN meter fails to indicate in green band when METER SEL switch is set to TIM IN.

Step 1. Check that associated TIM IN cable is properly connected to TIM IN receptacle.

Repair or replace as necessary.

Step 2. Check for defective TIM IN cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE (CONT)

6. TD-754/G TEST ALIGN meter fails to indicate in green band when METER SEL switch is set to PCM IN-1.

Step 1. Check that associated PCM IN-1 cable is properly connected.

Repair or replace as necessary.

Step 2. Check for defective PCM IN-1 cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

7. TD-754/G TEST ALIGN meter fails to indicate in green band when METER SEL switch is set to PCM IN-2 (24-channel operation).

Step 1. Check that associated PCM IN-2 cable is properly connected.

Repair or replace as necessary.

Step 2. Check for defective PCM IN-2 cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

8. One or more TD-976/G INPUT ALARMS (1 thru 8) light and audible alarm sounds.

Step 1. Check that associated PCM cable is properly connected.

Repair or replace as necessary.

Step 2. Check for defective associated cable. See paragraph 4-22.

Repair or replace as necessary.

Step 3. Check for defective patch cord. See paragraph 4-22.

Repair or replace as necessary.

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OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE (CONT)

9. Distant operator indicates loss of one group of four channels on the TD-1069/G (system 1 or 2). All other indications are normal.

Step 1. Check that associated signal cable is connected to the associated receptacle on the rear of TD-1069/G.

Repair or replace as necessary.

Step 2. Check for defective associated signal cable. See paragraph 4-22.

Repair or replace as necessary.

10. Distant operator indicates loss of channel 7 on system 1 or 2 with TD-1069/G installed.

Step 1. Check that MUX OUT cable is connected to MUX OUT receptacle TD-1069/G.

Repair or replace as necessary.

Step 2. Check for defective MUX OUT cable. See paragraph 4-22.

Repair or replace as necessary.

11. Local operator indicates loss of channel 7 on system 1 or 2 with TD-1069/G installed.

Step 1. Check that MUX IN cable is connected to MUX IN receptacle.

Repair or replace as necessary.

Step 2. Check for defective MUX IN cable. See paragraph 4-22.

Repair or replace as necessary.

12. Switchboard operator indicates loss of one group of four channels. All local indications are normal.

Step 1. Check for defective associated cable between TD-660(*)/G and TD-1065/G. See paragraph 4-22.

Repair or replace as necessary.

Step 2. Check for defective associated cable between TD-660(*)/G and CV-1548(*)/G. See paragraph 4-22.

Repair or replace as necessary.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

CABLE (CONT)

Step 3. Check for defective associated cable between CV-1548(*)/G and SIGNAL ENTRANCE BOX. See paragraph 4-22.

Repair or replace as necessary.

13. Switchboard operator reports that no signaling is available on any 2-wire channel.

Perform a systems self-test on the CV-1548/G. See paragraph 2-24.

Repair or replace as necessary.

14. Switchboard operator indicates loss of a specific channel or only one-way communication on a specific channel. All local indications are normal.

Check associated binding posts or 26-pair connector for proper connection.

Repair or replace as necessary.

15. Through order wire communications not available but all other indications are normal.

Step 1. Check for defective associated cable between TD-754/G and patch panel. See paragraph 4-22.

Repair or replace as necessary.

Step 2. Check for defective associated patch cord between ORDER WIRE PATCH panel connections. See paragraph 4-22.

Repair or replace as necessary.

KEY GENERATOR TSEC/KG-27

NOTE

When a malfunction occurs in an operating secure system remove the TSEC/KG-27 from the system. If the malfunction is corrected, it can only be the TSEC/KG-27 or interconnecting cables. A self-test on the TSEC/KG-27 will help in isolating a defective cable. The loopback check given in paragraph 2-20 can determine if the TSEC/KG-27 is defective. The following malfunctions of the TSEC/KG-27 are corrected with the TSEC/KG-27 in an operating system.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

KEY GENERATOR TSEC/KG-27 (CONT)

1. Local switchboard operator indicates a malfunction or distant operator indicates that distant TD-660A/G is in alarm. Local TSEC/KG-27 and TD-660A/G operates normally.

Step 1. Local switchboard operator reports all local receive audio channels are dead or have only noise or distant operator reports distant TD-660A/G is in alarm.

a. If fault indications are from switchboard operator, go to step 3.

b. If distant operator indicates a problem, go to step 2.

Step 2. Perform a loopback on TD-754/G. See paragraph 3-5.

a. If TSEC/KG-27 problem is corrected after loopback, have distant operator perform troubleshooting for TSEC/KG-27.

b. If problem persists, go to step 3.

Step 3. Contact distant operator and request test tone on each of the 12 channels.

NOTE

Clicks, buzzing, or rushing sound on all channels indicates a defective TSEC/KG-27.
Clicks, buzzing, or rushing sound on some channels indicates a defective TD-660A/G.

Go to step 4.

Step 4. Set MONITOR selector switch on TSEC/KG-27 to REC TIM, REC PCM, and REC FRAME, and observe MONITOR lamp.

a. If MONITOR lamp lights in all positions, go to step 5.

b. If MONITOR lamp is out in one or all positions, replace associated cable.

NOTE

Each time a cable is replaced, verify that MONITOR lamp lights for the switch position. If MONITOR lamp remains out, replace TSEC/KG-27.

Step 5. Monitor TD-660A/G PCM FROM AUX SIGNAL at TD-660A/G (REC PCM OUT from TSEC/KG-27).

a. PCM FROM AUX signal present at TD-660A/G and problem is corrected go to step 8.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

KEY GENERATOR TSEC/KG-27 (CONT)

b. PCM FROM AUX signal not present at TD-660A/G, go to step 6.

Step 6. Perform a loopback to the TSEC/KG-27. See paragraph 2-20.

a. Attempt a restart.

b. If restart is successful, go to step 7.

c. If restart is unsuccessful, replace defective TSEC/KG-27.

Step 7. Monitor all 12 channels with test tone.

a. If test tone is satisfactory on all channels, go to step 8.

b. If test tone is unsatisfactory there may be a malfunction in operating the TSEC/KG-27 and TD-660A/G. Go to step 8.

Step 8. Call distant operator and restore TSEC/KG-27 into normal operating mode.

a. If the system is operational, no further troubleshooting is necessary.

b. If the system is not operating properly, go to step 9.

NOTE

The previous eight steps have attempted to isolate a problem on the receive side of the TSEC/KG-27 based on local operator malfunctions.

Step 9. Check TSEC/KG-27 power and transmit functions if a problem still exists.

a. Set MONITOR selector switch to 4VB, 12V, -6V, 4VR, -10V.

b. If MONITOR lamp lights in all switch positions, go to step 10.

c. If MONITOR lamp does not light in all positions replace front panel fuses and MONITOR lamp.

d. If MONITOR lamp does not light in all positions, replace defective TSEC/KG-27.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

KEY GENERATOR TSEC/KG-27 (CONT)

Step 10. Set MONITOR selector switch to XMIT TIM, XMIT PCM, and XMIT FRAME.

a. If MONITOR lamp lights for all positions, go to step 11.

b. If MONITOR lamp does not light in one or more positions, replace associated cable.

c. If MONITOR lamp still does not light in one or more positions, replace TSEC/KG-27.

Step 11. Perform a loopback on TD-754/G. See paragraph 3-5.

a. If restart is successful, go to step 12.

b. If restart is unsuccessful, replace defective TSEC/KG-27.

Step 12. Call distant operator and restore TSEC/KG-27 into normal operation.

2. TSEC/KG-27 and/or TD-660A/G are in alarm.

Step 1. Call distant operator on order wire communications to check if distant terminal TSEC/KG-27 is in alarm.

If distant terminal is operating normally or has a problem with TSEC/KG-27, have distant operator stand by. Go to step 2.

Step 2. Perform a loopback on TD-754. See paragraph 3-5.

a. If TSEC/KG-27 problem is corrected after loopback, have distant operator perform troubleshooting for TSEC/KG-27.

b. If problem persists, go to step 3.

NOTE

If TD-976/Gs are used, depress loopback switch. If the problem is corrected, call distant operator to have troubleshooting performed on TSEC/KG-27.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

KEY GENERATOR TSEC/KG-27 (CONT)

Step 3. Attempt restart.

a. Set TSEC/KG-27 ON-OFF RESET switch to OFF/RESET, then to ON.

b. If TD-660A/G and TSEC/KG-27 are not in alarm, verify successful alarm check by operating MONITOR select switch to ALARM position. MONITOR lamp will light if alarm check is successful. Go to step 9.

c. If MONITOR lamp is out and TSEC/KG-27 is still in alarm, go to step 4.

Step 4. Perform detailed check of permuter KOK-1/TSEC.

a. Check permuter tray KOK-1/TSEC to ensure it has not been zeroized and permuter tray is properly inserted.

b. Check permuter tray settings.

c. If TD-660A/G and TSEC/KG-27 are not in alarm and system is operational, go to step 9.

d. If MONITOR lamp is out and TSEC/KG-27 is still in alarm, go to step 5.

Step 5. Substitute a permuter tray and perform another restart.

a. If restart is successful, go to step 9.

b. If restart is unsuccessful, go to step 7.

Step 6. Replace both permuter trays. After carefully checking permuter setting, perform another restart.

a. If restart is successful, go to step 9.

b. If restart is unsuccessful, go to step 7.

OPERATOR TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

KEY GENERATOR TSEC/KG-27 (CONT)

Step 7. Perform loopback test between TSEC/KG-27 and TD-660A/G. See paragraph 2-20.

a. Set MODE switch on TD-660A/G to 12 ch.

b. Set both permuter trays to the same nonzero setting. (See KAM-258( )/TSEC for maintenance settings).

c. Set TD-660A/G AUX-IN-OUT switch to IN and POWER switch to ON.

d. Attempt another restart.

e. If restart is successful, go to step 9.

f. If restart is unsuccessful, go to step 8.

Step 8. Set MONITOR switch to each position and observe that the MONITOR lamp lights.

a. If MONITOR lamp does not light in any position, replace associated cable.

b. If MONITOR lamp lights in all positions, attempt restart.

c. If restart is unsuccessful, replace defective TSEC/KG-27.

Step 9. Call distant operator and restore TSEC/KG-27 to normal operating configuration. The TSEC/KG-27 is now operational.

3-3. LOOPBACK CHECKS.

Loopback checks are done to isolate a problem to a component or related cabling in an operating system. Output circuits of the pcm components are looped back to input circuits.

Once a loopback check to a component is performed, an operator can now perform a self-test on the component to verify a fault. The operator will then refer to operator troubleshooting with the symptom encountered and resolve the problem.

Loopback checks are done on the patch panel.

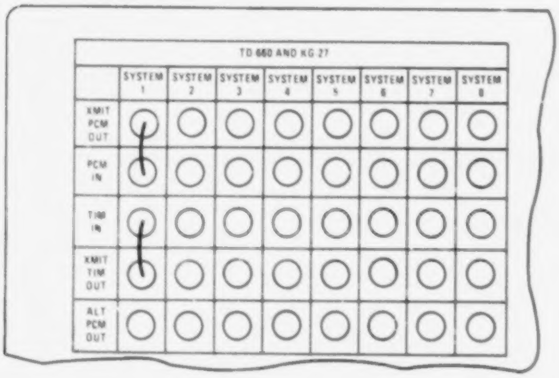
3-4. MULTIPLEXER TD-660(*)/G LOOPBACK.

The following loopback check can be performed to any TD-660(*)/G in an operating system. Only system 1 TD-660(*)/G is shown.

1. Remove any patch cords from SYSTEM 1 TD-660(*)/G.
2. Make the following patch panel connections.

SYSTEM 1

PCM IN	PCM OUT
TIM IN	TIM OUT


TD 660 AND KG 27
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 5
SYSTEM 6
SYSTEM 7
SYSTEM 8
XMIT PCM OUT
PCM IN
TIM IN
XMIT TIM OUT
ALT PCM OUT

EL3TR259

3. The TD-660(*)/G is now looped back.

3-5. MULTIPLEXER TD-204/U or TD-754/G LOOPBACK.

The following loopback check can be performed to any TD-754/G in an operating system. Only system 1 is shown.

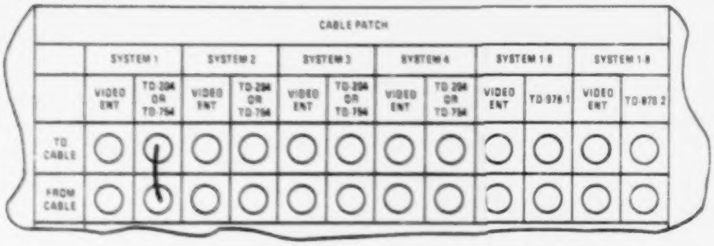
1. Set both mile switches on panels 12A4 and 12A5 to 1/2.
2. Set CABLE CURRENT to OFF.
3. Remove any patch cords from system 1 CABLE PATCH.
4. Make the following patch panel connections.

3-5. MULTIPLEXER TD-204/U or TD-754/G LOOPBACK. (CONT)

SYSTEM 1

TD-204-754

TO CABLE FROM CABLE


CABLE PATCH
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 1 8
SYSTEM 1 8
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-976 1
VIDEO ENT
TD-976 2
TO CABLE
FROM CABLE

EL3TR260

5. The TD-754/G is now looped back.

3-6. CABLE LINK LOOPBACK.

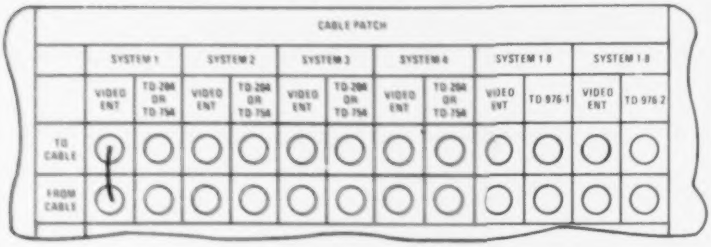
The following loopback check can be performed to any incoming signal from the video entrance box at the patch panel. Only system 1 is shown.

1. Remove any patch cords from system 1 CABLE PATCH.
2. Make the following patch panel connections.

SYSTEM 1

VIDEO ENT

TO CABLE FROM CABLE


CABLE PATCH
SYSTEM 1
SYSTEM 2
SYSTEM 3
SYSTEM 4
SYSTEM 1 8
SYSTEM 1 8
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-204 OR TD-754
VIDEO ENT
TD-976 1
VIDEO ENT
TD-976 2
TO CABLE
FROM CABLE

EL3TR261

3. System 1 video entrance box signals are now looped back.

Section III OPERATOR MAINTENANCE PROCEDURES

Subject	Para	Page
General	3-7	3-35
Inspection	3-8	3-35
Replacement of Power Indicator Lamp	3-9	3-36
Replacement of Power Distribution Panel Indicator Glow Lamps	3-10	3-37
Replacement of Fluorescent Lamps	3-11	3-38
Replacement of Fluorescent Lamp Starters	3-12	3-39
Replacement of Incandescent Cold Start Lamps	3-13	3-40

3-7. GENERAL.

This section provides instructions for operator maintenance of the AN/TCC-73(*) facility. The following initial setup information applies to all procedures:

Resources required are not listed unless they apply to the procedure.

Personnel are listed only if the task requires more than the operator. If Personnel Required is not listed, one person can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment Condition is not listed unless some other condition is required.

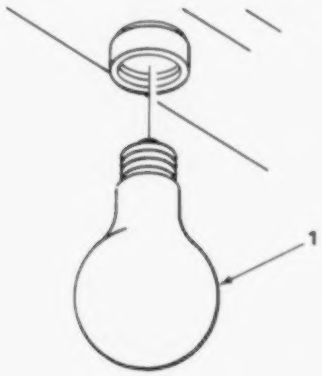
3-8. INSPECTION.

For inspection of items at the operator maintenance level, refer to operator's PMCS in chapter II, section II.

3-9. REPLACEMENT OF POWER INDICATOR LAMP.

MATERIALS/PARTS: Power indicator lamp

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
Rear curbside ceiling	Indicator lamp (1)	Remove. **Throw away.**
INSTALLATION		
Rear curbside ceiling	Indicator lamp (1)	Install. **Test lamp by turning external power on.**



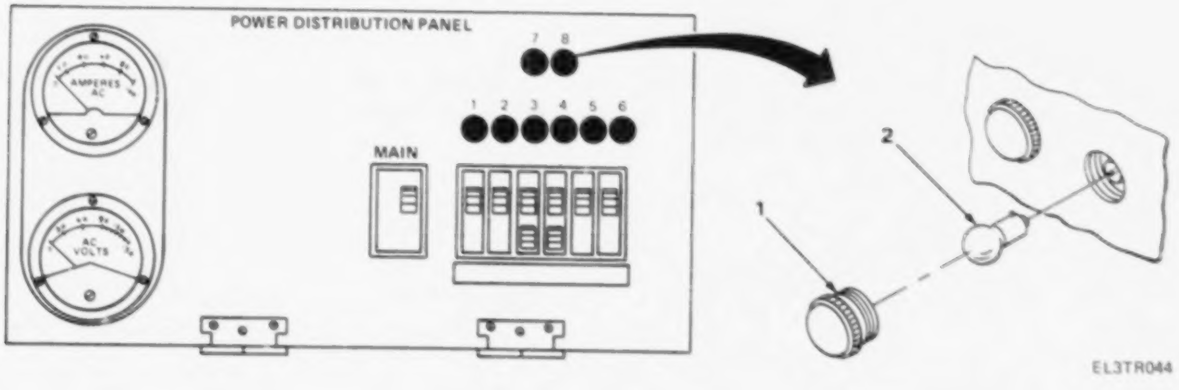
EL3TR043

3-10. REPLACEMENT OF POWER DISTRIBUTION PANEL INDICATOR GLOW LAMPS.

There are eight power distribution panel indicator glow lamps. Replacement of each indicator lamp is the same.

MATERIALS/PARTS: Indicator glow lamp, NSN 6240-00-682-3411.

LOCATION	ITEM	ACTION	REMARKS
REMOVAL			
1. Power distribution panel	Lamp cover (1)	Remove.	
2.	Lamp (2)	Remove.	**Push lamp in and rotate 1/2 turn to left. Throw away.**
INSTALLATION			
1. Power distribution panel	Lamp (2)	Install.	**Push lamp in and rotate 1/2 turn to right.**
2.	Lamp cover (1)	Install.	**Screw cover on. Test lamp by setting MAIN circuit breaker to ON.**

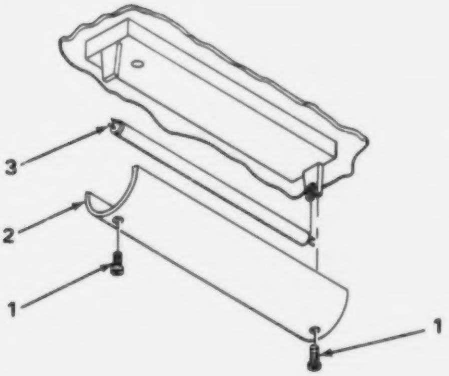

POWER DISTRIBUTION PANEL
AMPERES AC
AC VOLTS
7 8
1 2 3 4 5 6
MAIN
2
1
EL3TR044

3-11. REPLACEMENT OF FLUORESCENT LAMPS.

There are 17 fluorescent lamps. Replacement of each fluorescent lamp is the same.

MATERIALS/PARTS: Fluorescent lamp

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Ceiling lamp fixture	Screws (1) and cover (2)	Using cross-tip screwdriver, remove.
2.		Lamp (3)	Remove. **Hold each end of glass tube firmly and turn tube 1/2 turn to aline pins on lamp with slots in lampholder. Pull down and out.**
INSTALLATION			
1.	Ceiling lamp fixture	Lamp (3)	Install. **Hold each end of glass tube firmly. Aline pins on lamp with slots on lampholder and lift into lampholder. Turn tube 1/2 turn until it locks in place.**
2.		Cover (2) and screws (1)	Using cross-tip screwdriver, install. **Test lamp by setting LIGHTS circuit breaker to ON.**



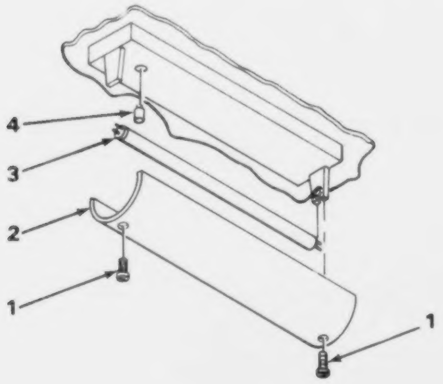
EL3TR045

3-12. REPLACEMENT OF FLUORESCENT LAMP STARTERS.

There are 17 fluorescent lamp starters. Replacement for each starter is the same.

MATERIALS/PARTS: Fluorescent starter

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Ceiling lamp fixture	Screws (1) and cover (2)	Using cross-tip screwdriver, remove.
2.	Lamp (3)	Remove. **Hold each end of glass tube firmly and turn tube 1/2 turn to aline pins on lamp with slots in lampholder. Pull down and out.**
3.	Starter (4)	Remove. **Push starter in, turn to right, and pull out.**
INSTALLATION		
1. Ceiling lamp fixture	Starter (4)	Install. **Push starter in and turn to left.**
2.	Lamp (3)	Install. **Hold each end of glass tube firmly. Aline pins on lamp with slots in lampholder and lift into lampholder. Turn tube 1/2 turn until it locks in place.**
3.	Cover (2) and screws (1)	Using cross-tip screwdriver, install. **To test starter, turn appropriate light switch on.**



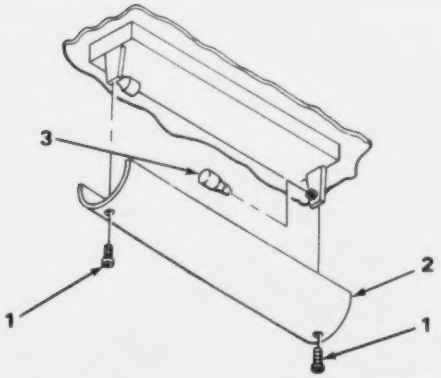
EL3TR046

3-13. REPLACEMENT OF INCANDESCENT COLD START LAMPS.

There are four incandescent cold start lamp fixtures, each containing two lamps. Replacement of each lamp is the same.

MATERIALS/PARTS: Incandescent lamp

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Ceiling cold start lamp fixture	Screws (1) and cover (2)	Using cross-tip screwdriver, remove.
2.	Lamp (3)	Remove. **Throw away.**
INSTALLATION		
1. Ceiling cold start lamp fixture	Lamp (3)	Install.
2.	Cover (2) and screws (1)	Using cross-tip screwdriver, install. **To test lamp, set LIGHTS circuit breaker to ON.**



EL3TR047

CHAPTER 4

ORGANIZATIONAL MAINTENANCE

Subject	Section	Page
Repair Parts, Special Tools, TMDE, and Support Equipment	I	4-1
Organizational Preventive Maintenance Checks and Services (PMCS)	II	4-2
Organizational Troubleshooting	III	4-2
Maintenance Procedures	IV	4-8
Preparation for Storage and Shipment	V	4-40

OVERVIEW

This chapter provides instructions for organizational servicing, troubleshooting and maintenance of the AN/TCC-73(*) facility. The following initial setup information applies to all procedures:

Resources required are not listed unless they apply to the procedure.

Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment Condition is not listed unless some other condition is required.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Subject	Para	Page
Common Tools and Equipment	4-1	4-1
Special Tools, TMDE, and Support Equipment	4-2	4-1
Repair Parts	4-3	4-1

4-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for each maintenance procedure is listed prior to each task. A complete listing of common tools and equipment is given in the Maintenance Allocation Chart (MAC) listed in appendix B at the back of this manual.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

There are no special tools or equipment needed to maintain the facility.

4-3. REPAIR PARTS.

Repair parts for the organizational maintenance of the facility are listed and illustrated in the repair parts and special tools list in TM 11-5805-585-24P.

Section II ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-4. GENERAL.

There are no Preventive Maintenance Checks and Services (PMCS) at the Organizational Maintenance level.

Section III ORGANIZATIONAL TROUBLESHOOTING

Subject	Para	Page
General	4-5	4-2
Symptom Index		4-2
Troubleshooting Table		4-4

4-5. GENERAL.

The troubleshooting table lists malfunctions which you may find when operating the equipment or when doing the organizational PMCS.

The AN/TCC-73(*) facility has monitoring equipment and indicator lamps to help isolate problems.

The troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to a higher level of maintenance.

If the troubleshooting steps given and the schematics found in the back of the manual do not solve your problem, report it to a higher level of maintenance.

When working on any problem, be sure to report your work on the forms shown in TM 38-750.

To use the troubleshooting table, first find your problem in the symptom index. The symptom index is organized by component and problems associated with each component. The index will give you a page number on which you will find your problem and the possible corrections. Turn to that page, find your problem, and use the procedures shown to correct it.

SYMPTOM INDEX

FACILITY

	Page
POWER INDICATOR LAMP	
Fails to light	
No indication on AC VOLTS meter	4-4
AC VOLTS meter indicator normal	4-4
Lights	
No indication on AC VOLTS meter	4-4
No indication on AC VOLTS meter, no power available inside terminal set	4-4
POWER DISTRIBUTION PANEL	
Glow Lamp	
Fails to light	4-5

SYMPTOM INDEX (CONT)

FACILITY (CONT)

POWER ENTRANCE BOX

No ac power available at receptacle 4-5

FLUORESCENT AND INCANDESCENT CEILING LIGHTS

Lights fail to light 4-5
Lights remain on regardless of BYPASS-BLACKOUT switch position 4-5
Roadside or curbside fluorescent lights do not light 4-6
Incandescent lights do not light 4-6

EXHAUST BLOWERS

Fails to operate 4-6

HEATERS

Heater No. 1 or Heater No. 2 fails to operate 4-6

EQUIPMENT

Equipment on roadside or curbside wall fails to operate 4-6
Roadside or curbside EQUIP 1 or EQUIP 2 receptacle fails to Operate related components 4-7

INTERCOM AND CONVENIENCE RECEPTACLES

No ac power available 4-7

LS-147(C)FI

Does not operate 4-7
Operates normally but no ac power available at CONVENIENCE receptacle 4-7

TA-312/PT

Local communications not available 4-7

TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

FACILITY

1. Power indicator neon lamp fails to light when power is applied to facility. No indication on AC VOLTS meter with MAIN circuit breaker set to ON.

Step 1. Check for bad power cable. See paragraph 4-21.

If power cable is good, go to step 2.

Step 2. Check for bad POWER 115 VAC IN receptacle (J1).

WARNING

External power supply must be turned to OFF to prevent electrical shock to personnel.

a. Turn external power supply off.
b. Disconnect power cable.
c. Connect power cable to 115 VAC OUT receptacle.
d. Turn external power supply on.

If power is now available in the facility, refer to a higher level of maintenance for replacement of POWER 115 VAC IN receptacle.

2. Power indicator neon lamp fails to light when power is applied to facility. AC VOLTS meter indicates normal with MAIN circuit breaker set to ON.

Check for bad lamp socket. See paragraph 4-20.

if lamp socket is bad, replace. See paragraph 4-20.

3. AC VOLTS meter does not indicate voltage with MAIN circuit breaker set to ON, power indicator neon lamp lights, ac power is available in facility.

Check for bad AC VOLTS meter. See testing, paragraph 4-23.

If AC VOLTS meter is bad, replace. See paragraph 4-10.

4. Power indicator neon lamp lights, no indication on AC VOLTS meter with MAIN circuit breaker set to ON, no ac power available in facility.

Check for bad MAIN circuit breaker. See paragraph 4-12.

If MAIN circuit breaker is bad, replace. See paragraph 4-12.

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

FACILITY (CONT)

5. Glow lamp fails to light when associated circuit breaker is set to ON.

Step 1. Check for bad circuit breaker. See paragraph 4-11.

If circuit breaker is bad, replace. See paragraph 4-11.

Step 2. Check for bad indicator lampholder. See paragraph 4-13.

If indicator lampholder is bad, replace. See paragraph 4-13.

6. No ac power available at 115 vac receptacle in power entrance box, ac power is available inside facility.

Check for bad CONV receptacle fuse.

a. Turn MAIN circuit breaker to OFF.
b. Remove fuse cap.
c. Remove fuse.
d. Using multimeter AN/USM-223 test for continuity. Touch a probe to each side of fuse.

NOTE

If there is no continuity, replace bad fuse. If there is continuity, replace receptacle. See paragraph 4-16.

7. Fluorescent and incandescent ceiling lights do not light when LIGHTS 1 and 2 and INCANDESCENT COLD-START LIGHT switches are set to ON, BYPASS-BLACKOUT switch is set to BLACKOUT, MAIN and LIGHTS circuit breakers are set to ON, and power is available in facility.

Check for bad LIGHTS circuit breaker. See paragraph 4 11.

If circuit breaker is bad, replace. See paragraph 4-11.

8. Ceiling lights remain on with door open regardless of BYPASS-BLACKOUT switch position.

Step 1. Check for bad interlock switch. See paragraph 4-19.

If interlock switch is bad, replace. See paragraph 4-19.

Step 2. Check for bad BYPASS-BLACKOUT switch. See paragraph 4-14.

If BYPASS-BLACKOUT switch is bad, replace. See paragraph 4-14.

TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

FACILITY (CONT)

9. Roadside or curbside rows of fluorescent ceiling lights do not light when LIGHT 1 or LIGHT 2 switch is set to ON.

Check for bad LIGHT 1 or LIGHT 2 switch. See paragraph 4-15.

If LIGHT 1 or LIGHT 2 switch is bad, replace. See paragraph 4-15.

10. Incandescent ceiling lights do not light when INCANDESCENT COLD-START LIGHTS switch is set to ON, fluorescent lights light.

Check for bad INCANDESCENT COLD-START LIGHTS switch. See paragraph 4-15.

If INCANDESCENT COLD-START LIGHTS switch is bad, replace. See paragraph 4-15.

11. Exhaust blower fails to operate when BLOWER switch is set to ON, MAIN circuit breaker is set to ON.

Step 1. Check for bad BLOWER switch. See paragraph 4-15.

If blower switch is bad, replace. See paragraph 4-15.
If blower switch is good, go to step 2.

Step 2. Check for bad BLOWER receptacle. See paragraph 4-16.

If blower receptacle is bad, replace. See paragraph 4-16.

12. Heater No. 1 or No. 2 fails to operate and MAIN circuit breaker is set to ON.

Step 1. Check for bad HTR #1 or HTR #2 circuit breaker. See paragraph 4-11.

If circuit breaker is bad, replace. See paragraph 4-11.
If circuit breaker is good, go to step 2.

Step 2. Check for bad HTR #1 or HTR #2 receptacle. See paragraph 4-16.

If HTR #1 or HTR #2 receptacle is bad, replace. See paragraph 4-16.
If HTR #1 or HTR #2 receptacle is good, replace heater. See paragraph 4-7.

TROUBLESHOOTING (CONT)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

FACILITY (CONT)

13. Equipment in racks on roadside or curbside wall fails to operate.

    Check for bad EQUIP 1 or EQUIP 2 circuit breaker. See paragraph 4-11.

    If EQUIP 1 or EQUIP 2 circuit breaker is bad, replace. See paragraph 4-11.

14. EQUIP 1 or EQUIP 2 receptacle on roadside or curbside wall fails to operate related components.

    Check for bad EQUIP 1 or EQUIP 2 receptacle. See paragraph 4-17.

    If EQUIP 1 or EQUIP 2 receptacle is bad, replace. See paragraph 4-17.

15. No ac power available at INTERCOM and CONVENIENCE receptacles.

    Check for bad CONV circuit breaker. See paragraph 4-11.

    If CONV circuit breaker is bad, replace. See paragraph 4-11.

16. LS-147(C)/FI does not operate, ac power is available at CONVENIENCE receptacles.

    Check for bad INTERCOM receptacle. See paragraph 4-17.

    If INTERCOM receptacle is bad, replace. See paragraph 4-17.
    If INTERCOM receptacle is good, refer to appropriate TM in appendix A, organizational maintenance of the LS-147(V)/FI.

17. LS-147(C)/FI operates normally but ac power is not available at a specific CONVENIENCE receptacle.

    Check for bad CONVENIENCE receptacle. See paragraph 4-17.

    If CONVENIENCE receptacle is bad, replace. See paragraph 4-17.

18. Local communications not available with TA-312/PT.

    Step 1. Check that batteries are installed.

    Install two BA-30 batteries.

    Step 2. Check that wire pair adjacent to TA-312/PT is connected to binding posts.

    Install wire pair on binding posts.

Section IV MAINTENANCE PROCEDURES

Subject	Para	Page
General	4-6	4-8
Replacement of Heaters	4-7	4-9
Replacement of Power Distribution Panel Current Transformer	4-8	4-10
Replacement of Power Distribution Panel Ammeter	4-9	4-12
Replacement of Power Distribution Panel AC Voltmeter	4-10	4-14
Testing and Replacement of Power Distribution Panel Circuit Breakers	4-11	4-16
Testing and Replacement of Power Distribution Panel MAIN Circuit Breaker	4-12	4-18
Replacement of Power Distribution Panel Indicator Lampholders	4-13	4-20
Replacement of Power Entrance Box CONVENIENCE Receptacle	4-14	4-21
Testing and Replacement of AC Switches	4-15	4-24
Testing and Replacement of Single Receptacle	4-16	4-26
Testing and Replacement of Duplex Receptacles	4-17	4-28
Replacement of Exhaust Blower Assembly	4-18	4-30
Testing and Replacement of Interlock Switch	4-19	4-32
Testing and Replacement of Power Indicator Neon Lamp Socket	4-20	4-34
Testing Power Cable	4-21	4-36
Testing Signal Cable	4-22	4-37
Testing AC Voltmeter	4-23	4-38
Testing Communications Equipment	4-24	4-38

4-6. GENERAL.

This section provides instructions for organizational maintenance of the AN/TCC-73(*) facility. The following initial setup information applies to all procedures:

Resources required are not listed unless they apply to the procedure. Tool Kit, Electronic Equipment TK-105/G is needed for all procedures, and tools will not be listed unless they are not contained in the kit.

Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment Condition is not listed unless some other condition is required.

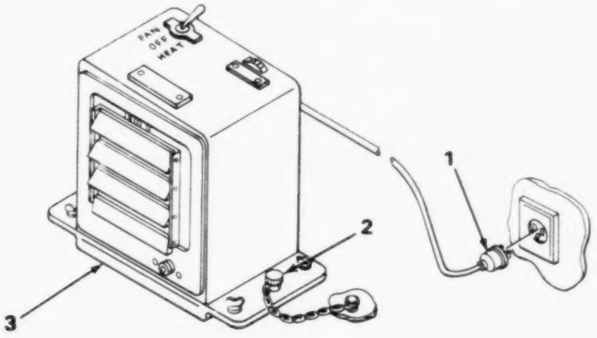
4-7. REPLACEMENT OF HEATERS.

Replacement of heater No. 1 and heater No. 2 are the same. Replacement procedure for only one heater is given.

MATERIALS/PARTS: Heater

EQUIPMENT CONDITION: Heater No. 1 or Heater No. 2 circuit breaker set to OFF.

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Heater	Plug (1)	Unplug.
2.	Holddown bolts (2)	Remove.
3.	Heater (3)	Remove.
INSTALLATION		
1. Roadside front corner	Heater (3)	Put in place.
2. Heater	Holddown bolts (2)	Install.
3. Wall	Plug (1)	Plug in.



EL3TR084

4-8. REPLACEMENT OF POWER DISTRIBUTION PANEL CURRENT TRANSFORMER.

MATERIALS/PARTS: Current transformer

EQUIPMENT CONDITION: Power distribution panel open.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			

NOTE

Count and note the number of turns the heavy black lead is wrapped around the center hole of the current transformer.

	LOCATION	ITEM	ACTION **REMARKS**
1.	MAIN circuit breaker	Screws (1) and heavy black lead (2)	Using flat-tip screwdriver, loosen screw and remove lead.
2.	Ammeter	Nuts (3), flat washers (4) and leads (5)	Tag leads. Using 3/8-inch wrench, remove.
3.		Nuts (6), flat washers (7) and screws (8)	Using flat-tip screwdriver and 3/8-inch wrench, remove.
4.	Power distribution box	Current transformer (9)	Remove.

INSTALLATION

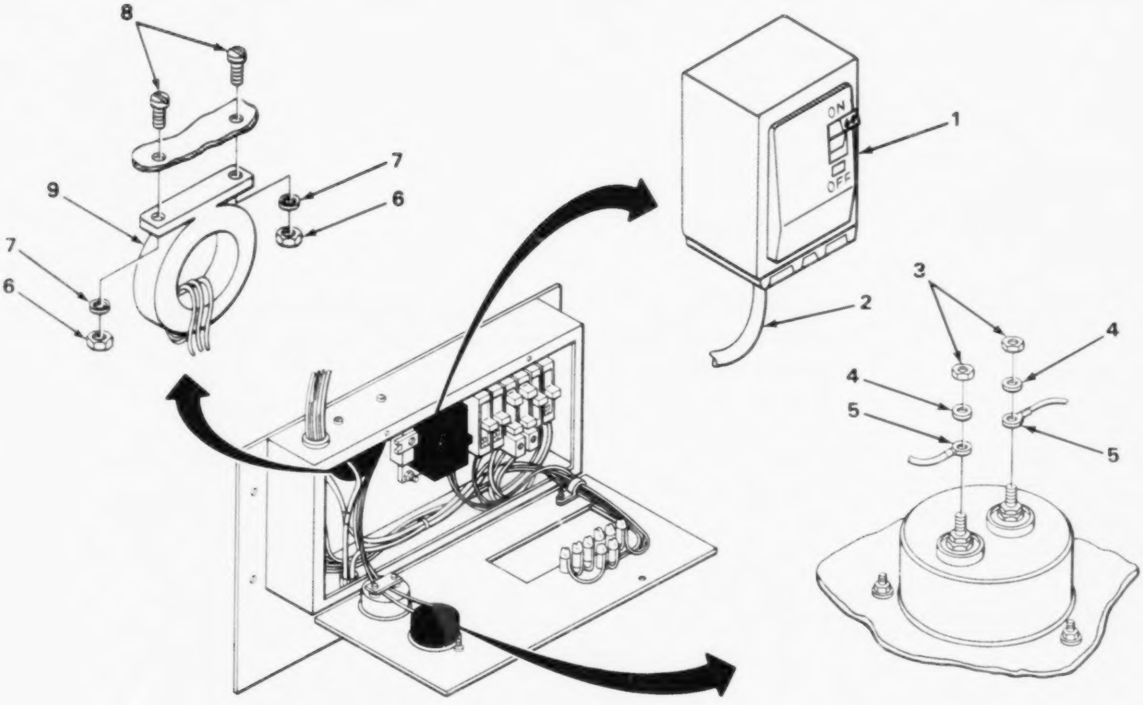
	LOCATION	ITEM	ACTION **REMARKS**
1.	Power distribution panel	Current transformer (9)	Put in place.
2.	Current transformer	Screws (8), flat washers (7) and nuts (6)	Using flat-tip screwdriver and 3/8-inch wrench, install.
3.	Ammeter	Leads (5), flat washers (4) and nuts (3)	Remove tags. Using 3/8-inch wrench, install.

NOTE

Make sure that the heavy black lead is wrapped around the center hole the number of times noted in removal.

4-8. REPLACEMENT OF POWER DISTRIBUTION PANEL CURRENT TRANSFORMER. (CONT)

LOCATION	ITEM	ACTION REMARKS
INSTALLATION (CONT)		
4. MAIN circuit breaker	Heavy black lead (2) and screw (1)	Using flat-tip screwdriver, install black lead and tighten screw.



EL3TR063

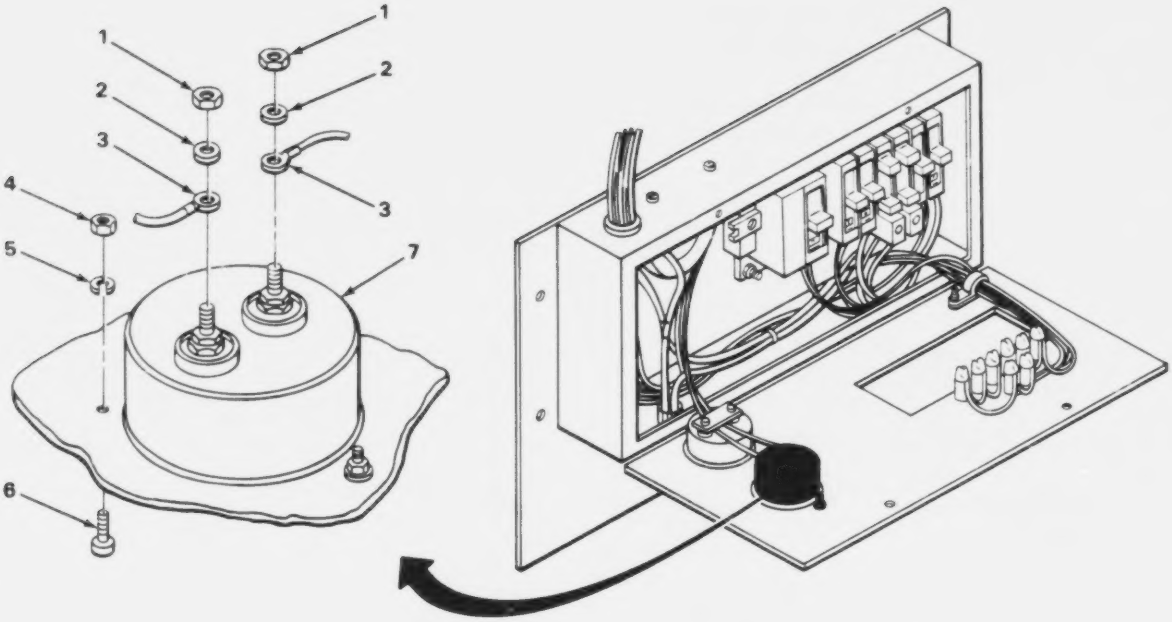
4-9. REPLACEMENT OF POWER DISTRIBUTION PANEL AMMETER.

MATERIALS/PARTS: Ammeter

EQUIPMENT CONDITION: Power distribution panel open.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Ammeter	Nuts (1), flat washers (2) and leads (3)	Tag leads. Using 3/8-inch wrench, remove.
2.	Power distribution panel	Three nuts (4), three lockwashers (5) and three screws (6)	Using flat-tip screwdriver and 3/8-inch wrench, remove.
3.		Ammeter (7)	Remove.
INSTALLATION			
1.	Power distribution panel	Ammeter (7)	Install.
2.		Three screws (6), three lockwashers (5) and three nuts (4)	Using flat-tip screwdriver and 3/8-inch wrench, install.
3.	Ammeter	Leads (3), flat washers (2) and nuts (1)	Remove tags. Using flat-tip screwdriver, install.

4-9. REPLACEMENT OF POWER DISTRIBUTION PANEL AMMETER. (CONT)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EL3TR064

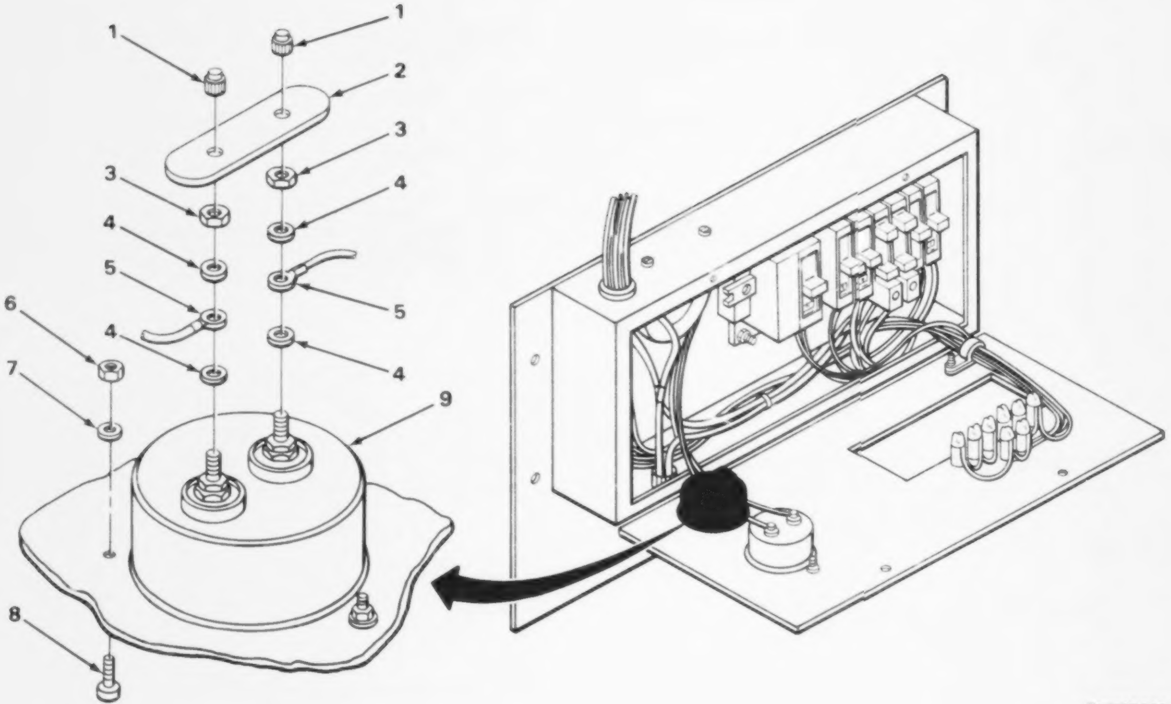
4-10. REPLACEMENT OF POWER DISTRIBUTION PANEL AC VOLTMETER.

MATERIALS/PARTS: Voltmeter

EQUIPMENT CONDITION: Power distribution panel open.

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	Voltmeter	Caps (1) and shield (2)	Using flat-tip screwdriver, remove.
2.		Nuts (3), flat washers (4) and leads (5)	Using 3/8-inch wrench, remove.
3.		Three nuts (6), three lockwashers (7) and three screws (8)	Using flat-tip screwdriver and 3/8-inch wrench, remove.
4.	Power distribution panel	Voltmeter (9)	Remove.
INSTALLATION			
1.	Power distribution panel	Voltmeter (9)	Install.
2.		Three screws (8), three lockwashers (7) and three nuts (6)	Using flat-tip screwdriver and 3/8-inch wrench, install.
3.	Voltmeter	Flat washers (4), leads (5) and nuts (3)	Remove tags. Using 3/8-inch wrench, install.
4.		Shield (2) and caps (1)	Using flat-tip screwdriver, install.

4-10. REPLACEMENT OF POWER DISTRIBUTION PANEL AC VOLTMETER. (CONT)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EL3TR065

4-11. TESTING AND REPLACEMENT OF POWER DISTRIBUTION PANEL CIRCUIT BREAKERS.

There are six circuit breakers. Two are tandem circuit breakers with two connecting leads, and four are standard circuit breakers with one connecting lead. Replacement of each circuit breaker is the same.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Circuit breaker, standard
Circuit beaker, tandem

EQUIPMENT CONDITION: Power distribution panel open.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Power distribution panel	Circuit breakers (1)	Remove. **Grasp circuit breaker and pull it straight out.**

NOTE

Tandem circuit breakers have a screw in the front and a screw in the rear for securing leads.

	LOCATION	ITEM	ACTION **REMARKS**
2.	Circuit breaker	Leads (2) and screw (3)	Tag leads. Using flat-tip screwdriver, loosen screw and remove leads.
TESTING			
1.	Workbench	Circuit breaker (1)	Set circuit breaker to ON.
2.		Multimeter (4)	Set multimeter for continuity test.
3.	Circuit breaker	Multimeter probe (5) and screw (6)	Touch red probe to screw.
4.		Multimeter probe (7) and contact (8)	Touch black probe to contact.

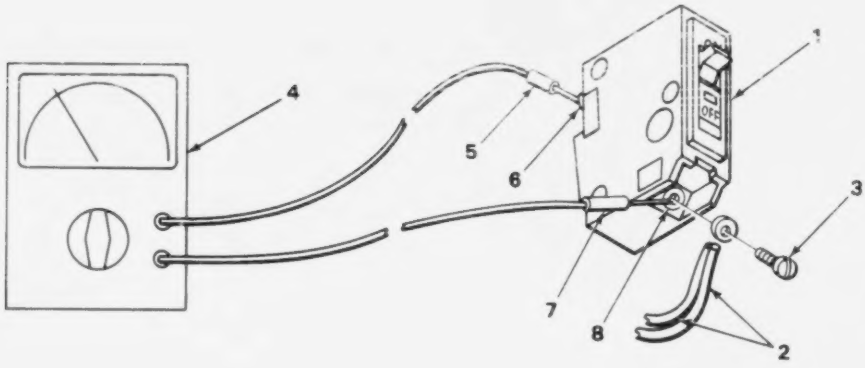
4-11. TESTING AND REPLACEMENT OF POWER DISTRIBUTION PANEL CIRCUIT BREAKERS. (CONT)

	LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION			

NOTE

If multimeter indicates continuity, circuit breaker is good. If multimeter indicates open circuit, replace circuit breaker.

	LOCATION	ITEM	ACTION **REMARKS**
1.	Circuit breaker	Leads (2) and screw (3)	Remove tags. Using flat-tip screwdriver, install.
2.	Power distribution panel	Circuit breaker (1)	Install.



EL3TR067

4-12. TESTING AND REPLACEMENT OF POWER DISTRIBUTION PANEL MAIN CIRCUIT BREAKER.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: MAIN circuit breaker

EQUIPMENT CONDITION: Power distribution panel open.

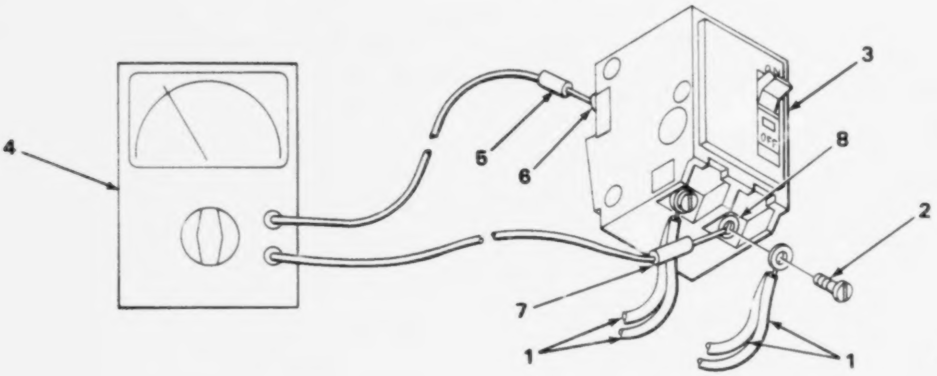
	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	MAIN circuit breaker	Leads (1) and screws (2)	Tag leads. Using flat-tip screwdriver, loosen screws and remove wires.
2.	Power distribution panel	MAIN circuit breaker (3)	Remove. **Grasp MAIN circuit breaker and pull it straight out from panel.**
TESTING			
1.	Workbench	MAIN circuit breaker (3)	Set MAIN circuit breaker to ON.
2.		Multimeter (4)	Set multimeter for continuity test.
3.	MAIN circuit breaker	Multimeter probe (5) and screw (6)	Touch red probe to screw.
4.		Multimeter probe (7) and terminal (8)	Touch black probe to terminal.

NOTE

If multimeter indicates continuity, MAIN circuit breaker is good. If multimeter indicates an open circuit, replace MAIN circuit breaker.

4-12. TESTING AND REPLACEMENT OF POWER DISTRIBUTION PANEL MAIN CIRCUIT BREAKER. (CONT)

	LOCATION	ITEM	ACTION REMARKS
INSTALLATION			
1.	Power distribution panel	MAIN circuit breaker (3)	Install.
2.	MAIN circuit breaker	Leads (1) and screws (2)	Remove tags. Using flat-tip screwdriver, install.



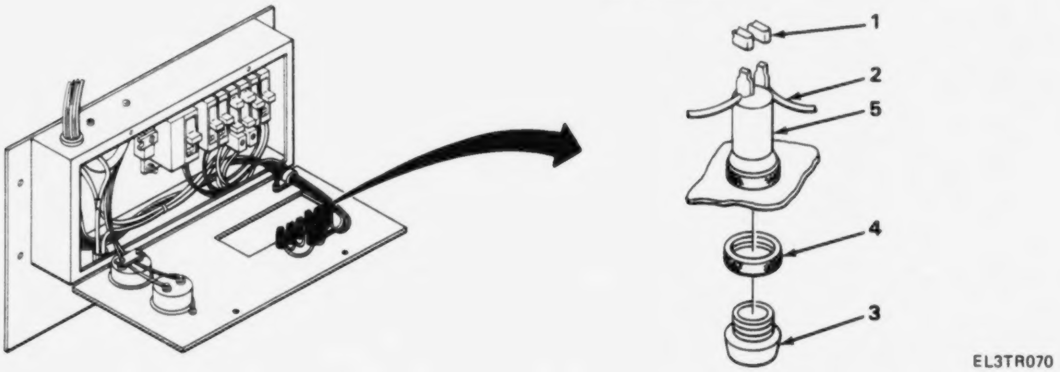
4-13. REPLACEMENT OF POWER DISTRIBUTION PANEL INDICATOR LAMPHOLDERS.

There are eight indicator lampholders. Replacement of each lampholder is the same.

MATERIALS/PARTS: Indicator lampholder
Electrical tape, NSN 5970-00-188-5577

EQUIPMENT CONDITION: Power distribution panel open.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Lampholder	Electrical tape (1)	Remove.
2.		Leads (2)	Tag leads. Using soldering iron, unsolder.
3.		Lens cap (3)	Remove by unscrewing.
4.		Knurled nut (4)	Using pliers, remove.
5.	Power distribution panel	Lampholder (5)	Remove.
INSTALLATION			
1.	Power distribution panel	Lampholder (5)	Install.
2.	Lampholder	Knurled nut (4)	Using pliers, install.
3.		Lens cap (3)	Install.
4.		Leads (2)	Remove tags. Using soldering iron, solder.
5.		Electrical tape (1)	Using electrical tape, tape. **Wrap two turns of tape around each connection.**



4-14. TESTING AND REPLACEMENT OF POWER ENTRANCE BOX CONVENIENCE RECEPTACLE.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Receptacle

EQUIPMENT CONDITION: Cover open on power entrance box.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Power entrance box	Screws (1)	Using flat-tip screwdriver, remove.
2.		Receptacle cover (2)	Remove.
3.	Receptacle	Screws (3)	Using flat-tip screwdriver, remove.

NOTE

Pull receptacle out to allow access to lead connections.

	LOCATION	ITEM	ACTION **REMARKS**
4.		Screw (4), screw (5), screw (6), black lead (7), white lead (8) and green lead (9)	Tag leads. Using flat-tip screwdriver, loosen screws and remove leads.
TESTING			
1.	Workbench	Multimeter (10)	Set multimeter for continuity test.
2.	Receptacle	Multimeter probe (11) and plug socket (12)	Insert red probe into plug socket.
3.		Multimeter probe (13) and screw (14)	Touch black probe to screw.

NOTE

If multimeter indicates continuity, do steps 4 and 5. If multimeter indicates an open circuit, replace receptacle.

4-14. TESTING AND REPLACEMENT OF POWER ENTRANCE BOX CONVENIENCE RECEPTACLE. (CONT)

	LOCATION	ITEM	ACTION REMARKS
TESTING (CONT)			
4.	Receptacle	Multimeter probe (15) and plug socket (16)	Insert red probe into plug socket.
5.		Multimeter probe (17) and screw (18)	Touch black probe to screw.

NOTE

If multimeter indicates continuity, repeat steps 1 through 5 for second plug socket. If multimeter indicates open circuit, replace receptacle.

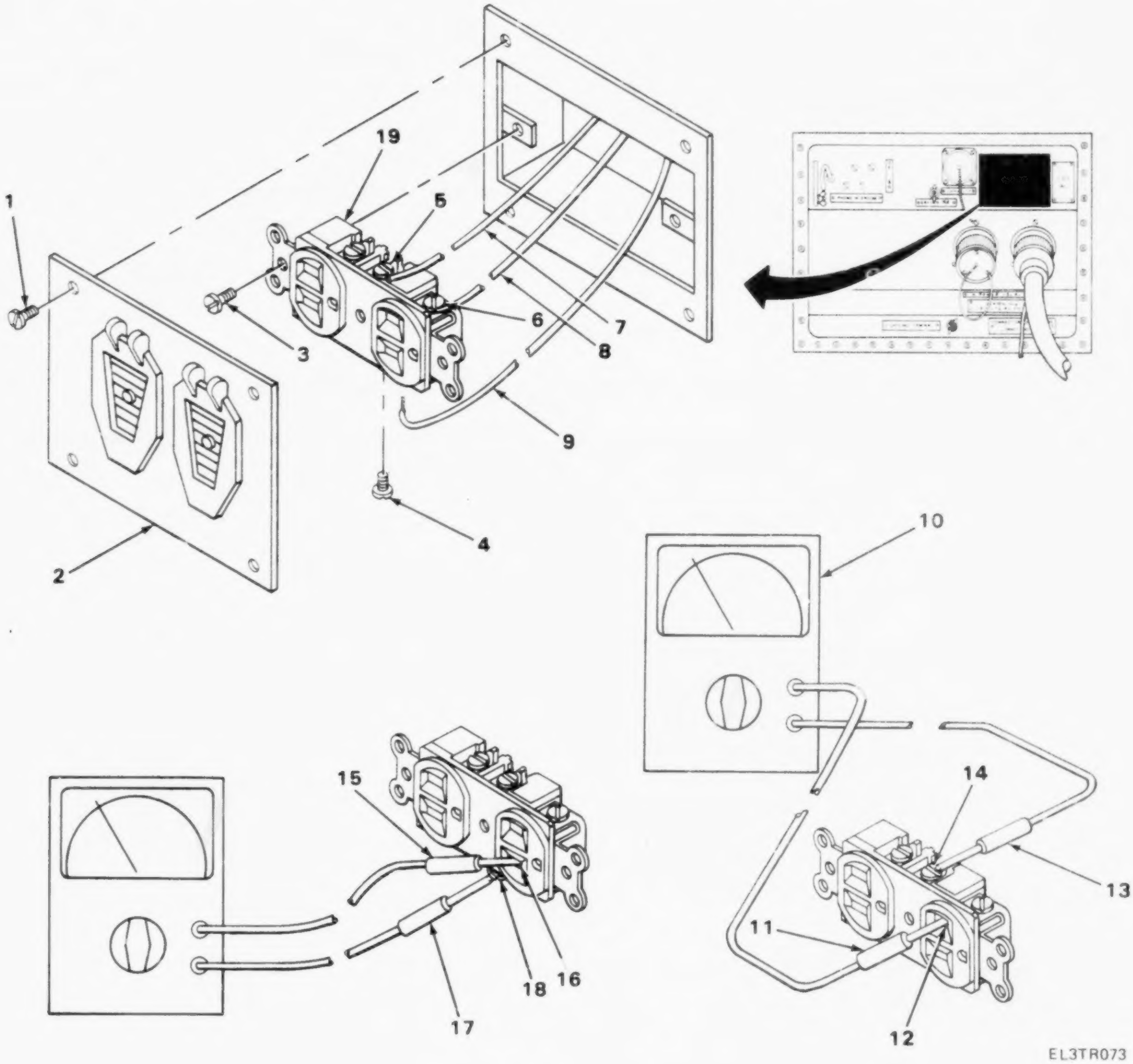
INSTALLATION

NOTE

Note proper polarity markings on receptacle (white, black, green) and connect leads accordingly.

	LOCATION	ITEM	ACTION REMARKS
1.	Receptacle	Black lead (7) and screw (5)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
2.		White lead (8) and screw (6)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
3.		Green lead (9) and screw (4)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
4.	Power entrance box	Receptacle (19)	Put in place.
5.		Screws (3)	Using flat-tip screwdriver, install.
6.		Receptacle cover (2)	Put in place.
7.		Screws (1)	Using flat-tip screwdriver, install.

4-14. TESTING AND REPLACEMENT OF POWER ENTRANCE BOX CONVENIENCE RECEPTACLE. (CONT)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EL3TR073

4-15. TESTING AND REPLACEMENT OF AC SWITCHES.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: AC switch

REMOVAL

	LOCATION	ITEM	ACTION REMARKS
1.	Switch cover	Screws (1) and cover (2)	Using flat-tip screwdriver, remove.
2.		Screws (3)	Using flat-tip screwdriver, remove.

NOTE

Pull switch out to allow access to lead connections.

	LOCATION	ITEM	ACTION REMARKS
3.		Leads (4) and screws (5)	Tag leads. Using flat-tip screwdriver, loosen screws and remove leads.

TESTING

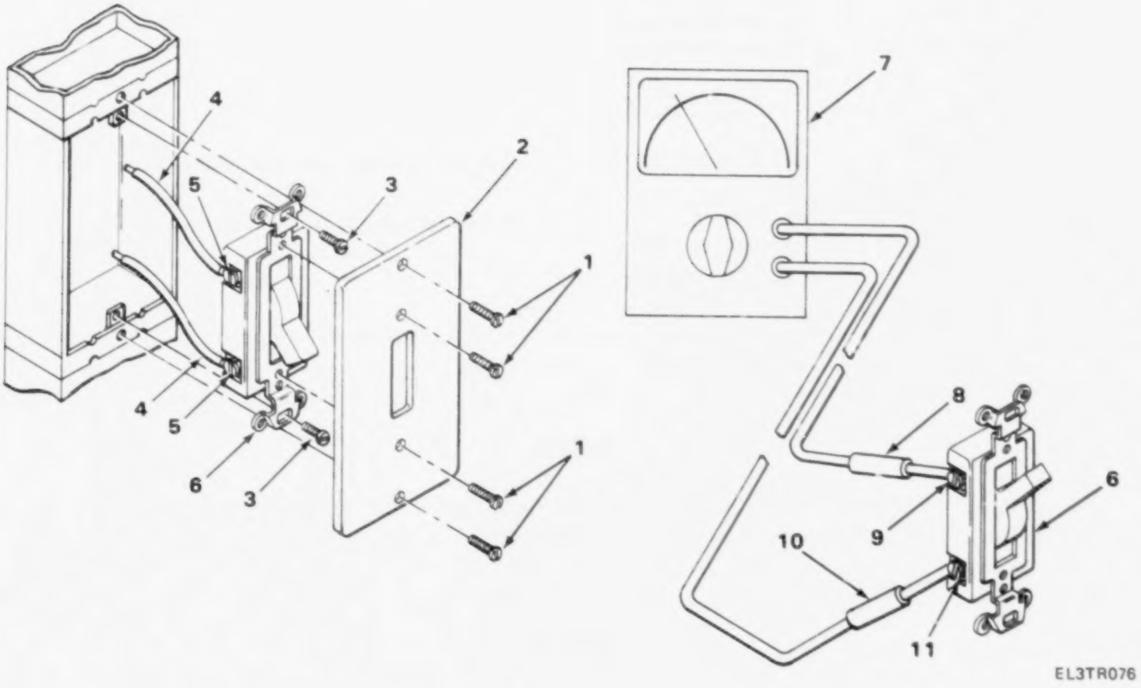
	LOCATION	ITEM	ACTION REMARKS
1.	Workbench	Switch (6)	Set switch to ON.
2.		Multimeter (7)	Set multimeter for continuity test.
3.	Switch	Multimeter probe (8) and screw (9)	Touch red probe to screw.
4.		Multimeter probe (10) and screw (11)	Touch black probe to screw.

NOTE

If multimeter indicates continuity, the switch is good. If multimeter indicates an open circuit, replace switch.

4-15. TESTING AND REPLACEMENT OF AC SWITCHES. (CONT)

	LOCATION	ITEM	ACTION **REMARKS**
INSTALLATION			
1.	Switch	Leads (4) and screws (5)	Remove tags. Using flat-tip screwdriver, install leads and tighten screws.
2.	Switch box	Switch (6)	Put in place.
3.		Screws (3)	Using flat-tip screwdriver, install.
4.		Cover (2)	Put in place.
5.		Screws (1)	Using flat-tip screwdriver, install.



4-16. TESTING AND REPLACEMENT OF SINGLE RECEPTACLE.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Single receptacle

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
1. Receptacle cover	Screws (1) and receptacle cover (2)	Using flat-tip screwdriver, remove.
2. Receptacle	Screws (3)	Using flat-tip screwdriver, remove.

NOTE

Pull receptacle out to allow access to lead connections.

3.	Black lead (4), white lead (5), green lead (6), screw (7), screw (8) and screw (9)	Tag leads. Using flat-tip screwdriver, loosen screws and remove leads.
TESTING		
1. Workbench	Multimeter (10)	Set multimeter for continuity test.
2. Receptacle	Multimeter probe (11) and plug socket (12)	Insert red probe into plug socket.
3.	Multimeter probe (13) and screw (14)	Touch black probe to screw.

NOTE

If multimeter indicates continuity, repeat steps 2 and 3 for other side of receptacle. If multimeter indicates open circuit, replace receptacle.

INSTALLATION

NOTE

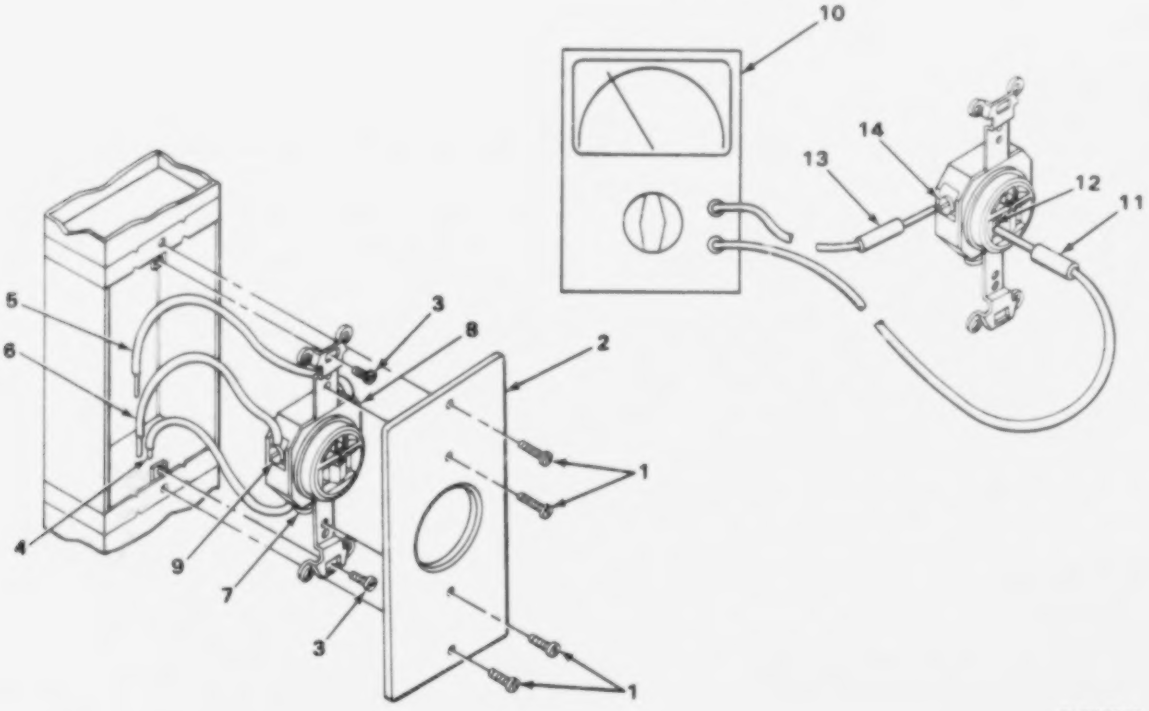
Note polarity markings on receptacle (white, black, green) and connect leads accordingly.

1.	White lead (5) and screw (8)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.

4-16. TESTING AND REPLACEMENT OF SINGLE RECEPTACLE. (CONT)

INSTALLATION (CONT)

	LOCATION	ITEM	ACTION REMARKS
2.		Black lead (4) and screw (7)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
3.	Receptacle	Green lead (6) and screw (9)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
4.	Outlet box	Receptacle (19)	Put in place.
5.		Screws (3)	Using flat-tip screwdriver, install.
6.		Receptacle cover (2)	Put in place.
7.	Receptacle cover	Screws (1)	Using flat-tip screwdriver, install.



EL3TR079

4-17. TESTING AND REPLACEMENT OF DUPLEX RECEPTACLES.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Duplex receptacle

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	Receptacle cover	Screws (1) and receptacle cover (2)	Using flat-tip screwdriver, remove.
2.	Receptacle	Screws (3)	Using flat-tip screwdriver, remove.

NOTE

Pull receptacle out to allow access to lead connections.

	LOCATION	ITEM	ACTION REMARKS
3.		Screw (4), screw (5), screw (6), black lead (7), white lead (8) and green lead (9)	Tag leads. Using flat-tip screwdriver, loosen screws and remove leads
TESTING			
1.	Workbench	Multimeter (10)	Set multimeter for continuity test.
2.	Receptacle	Multimeter probe (11) and plug socket (12)	Insert red probe into plug socket.
3.		Multimeter probe (13) and screw (14)	Touch black probe to screw.

NOTE

If multimeter indicates continuity, repeat steps 2 and 3 for other three sides of receptacle. If multimeter indicates open circuit, replace receptacle.

INSTALLATION

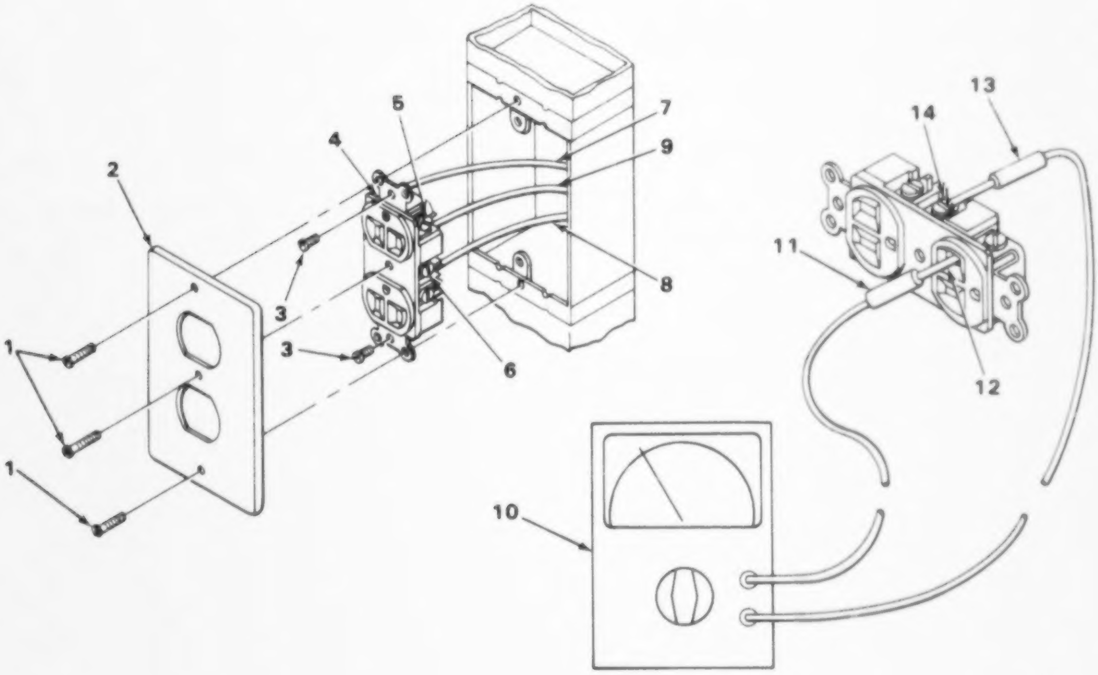
NOTE

Note polarity marking on receptacle (white, black, green) and connect leads accordingly.

4-17. TESTING AND REPLACEMENT OF DUPLEX RECEPTACLES. (CONT)

INSTALLATION (CONT)

LOCATION	ITEM	ACTION REMARKS
1.	White lead (8) and screw (6)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
2.	Black lead (7) and screw (4)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
3. Receptacle	Green lead (9) and screw (5)	Remove tag. Using flat-tip screwdriver, install lead and tighten screw.
4. Outlet box	Receptacle (19)	Put in place.
5.	Screws (1)	Using flat-tip screwdriver, install.
6.	Receptacle cover (2)	Put in place.
7.	Screws (3)	Using flat-tip screwdriver, install.



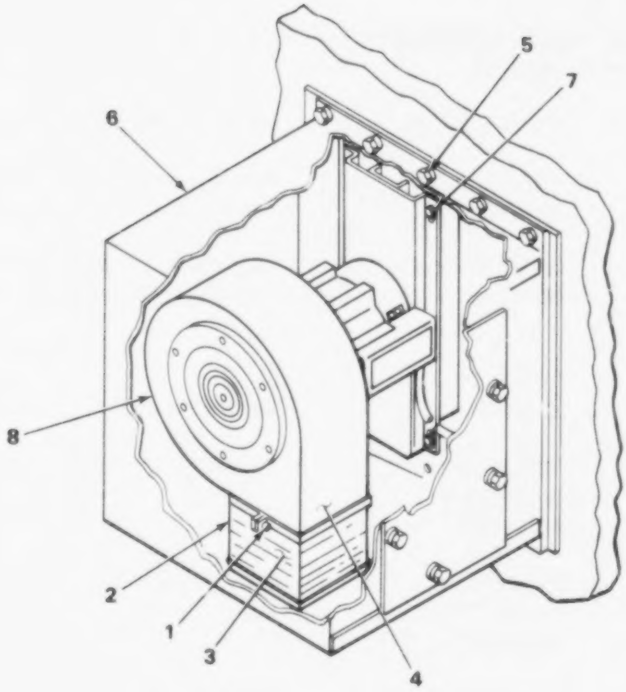
EL3TR082

4-18. REPLACEMENT OF EXHAUST BLOWER ASSEMBLY.

EQUIPMENT CONDITION: Exhaust blower assembly unplugged.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Inside front wall blower box assembly	Screw (1), clamp (2), duct (3) and blower port (4)	Using flat-tip screwdriver, loosen screw, pull clamp and duct down from blower port.
2.		Ten screws (5)	Using 1/2-inch wrench, remove.
3.	Forward wall	Blower box (6)	Remove.
4.	Mounting plate	Four screws (7)	Using 1/2-inch wrench, remove.
5.	Forward wall	Blower assembly (8)	Remove.
INSTALLATION			
1.	Forward wall	Blower assembly (8)	Put in place.
2.	Mounting plate	Four screws (7)	Using 1/2-inch wrench, install.
3.	Forward wall	Blower box (6)	Put in place.
4.		Ten screws (5)	Using 1/2-inch wrench, install.
5.	Inside front wall blower box assembly	Duct (3), clamp (2) and blower port (4)	Pull duct and clamp up and around blower port.
6.		Screw (1)	Using flat-tip screwdriver, tighten.

4-18. REPLACEMENT OF EXHAUST BLOWER ASSEMBLY. (CONT)



EL3TR083

4-19. TESTING AND REPLACEMENT OF INTERLOCK SWITCH.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Interlock switch

EQUIPMENT CONDITION: Entrance door open.

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	Entrance door frame	Screws (1) and cover (2)	Using flat-tip screwdriver, remove.
2.	Interlock switch	Screws (3)	Using flat-tip screwdriver, remove.
3.	Receptacle	Interlock switch (4)	Pull out.
4.	Interlock switch	Leads (5) and screws (6)	Tag leads. Using flat-tip screwdriver loosen screws and remove leads.
TESTING			
1.	Workbench	Multimeter (7)	Set multimeter for continuity test.
2.	Interlock switch	Multimeter probe (8) and screw (9)	Touch red probe to screw.
3.		Multimeter probe (10) and screw (11)	Touch black probe to screw.
4.		Interlock switch lever (12)	Press in switch lever.

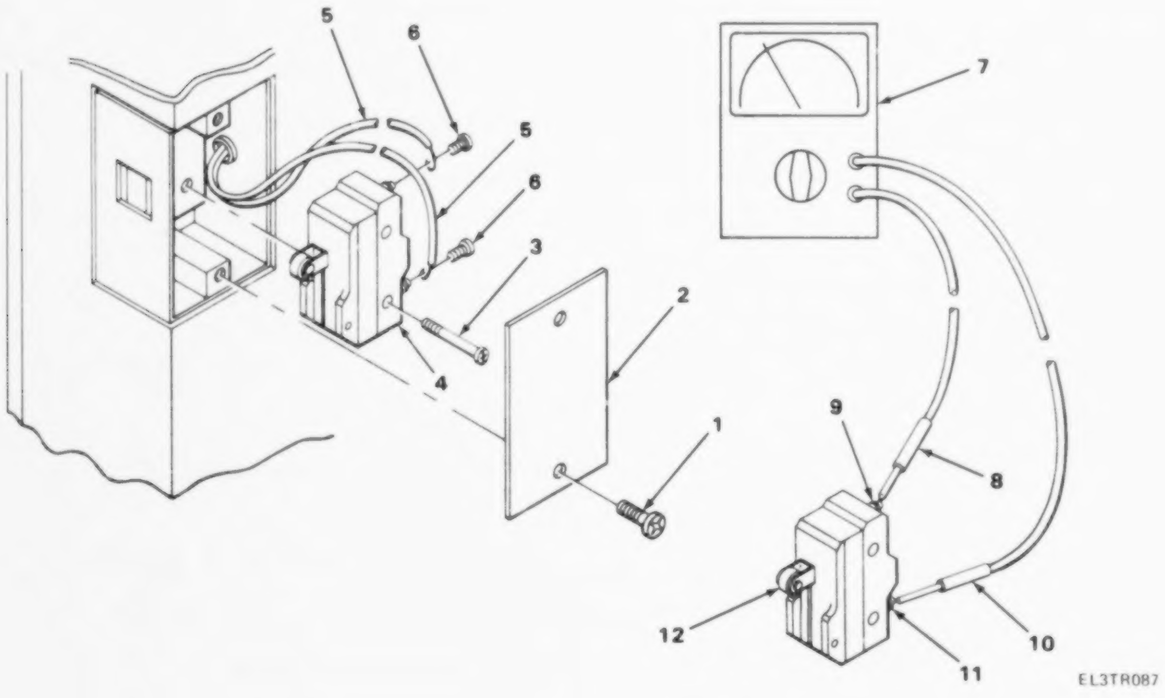
NOTE

If multimeter indicates no continuity, replace interlock switch.

4-19. TESTING AND REPLACEMENT OF INTERLOCK SWITCH. (CONT)

INSTALLATION

	LOCATION	ITEM	ACTION REMARKS
1.	Receptacle	Interlock switch (4)	Put in place.
2.	Interlock switch	Leads (5) and screws (6)	Remove tags. Using flat-tip screwdriver, install leads. Tighten screws.
3.	Receptacle	Interlock switch (4)	Put in place.
4.	Interlock switch	Screws (3)	Using flat-tip screwdriver, install.
5.	Entrance door frame	Cover (1) and screws (2)	Using flat-tip screwdriver, install.



4-20. TESTING AND REPLACEMENT OF POWER INDICATOR NEON LAMP SOCKET.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Power indicator neon lamp socket

EQUIPMENT CONDITION: Neon lamp removed.

REMOVAL

	LOCATION	ITEM	ACTION REMARKS
1.	Power indicator neon lamp	Porcelain ring (1)	Remove.
2.		Screws (2) and cover (3)	Using flat-tip screwdriver, remove.
3.		Lamp socket (4)	Pull down.
4.		Screws (5) and leads (6)	Using flat-tip screwdriver, loosen screws and remove leads.
5.		Lamp socket (4)	Remove.

TESTING

	LOCATION	ITEM	ACTION REMARKS
1.	Workbench	Multimeter (7)	Set multimeter for continuity test.
2.	Socket	Multimeter probe (8) and contact (9)	Touch red probe to center contact.
3.		Multimeter probe (10) and screw (11)	Touch black probe to screw.

NOTE

If multimeter indicates continuity, do steps 4 and 5. If multimeter indicates open circuit, replace lamp socket.

	LOCATION	ITEM	ACTION REMARKS
4.		Multimeter probe (12) and lamp socket (13)	Touch red probe to side of lamp socket.
5.		Multimeter probe (14) and screw (15)	Touch black probe to screw.

4-20. TESTING AND REPLACEMENT OF POWER INDICATOR NEON LAMP SOCKET. (CONT)

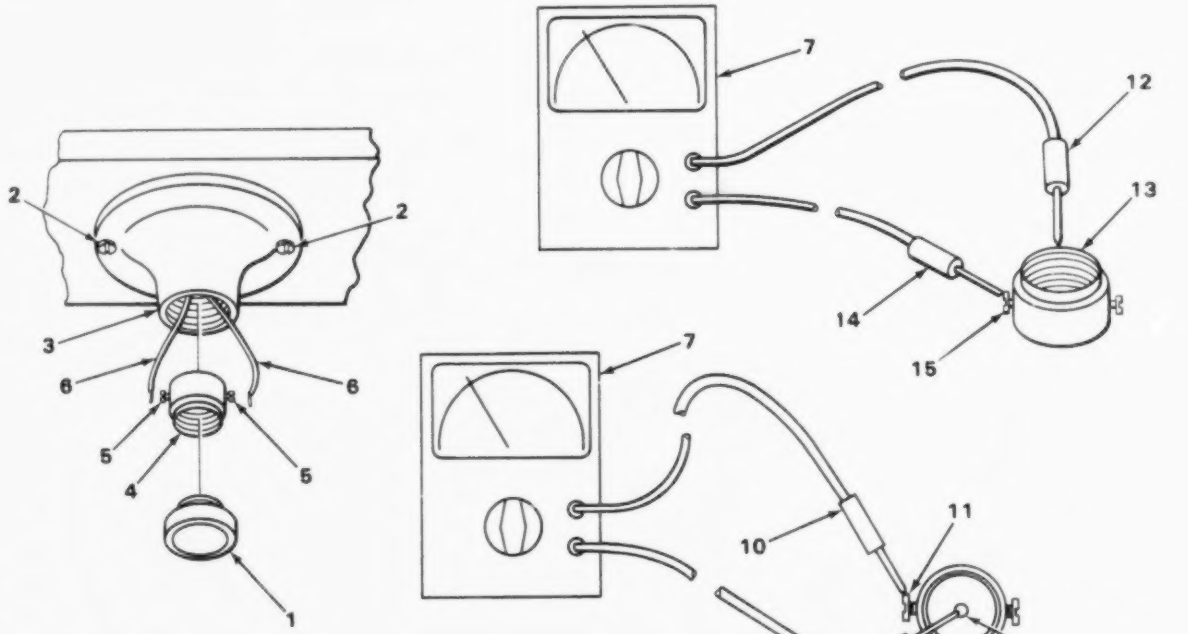
TESTING - CONTINUED

NOTE

If multimeter indicates an open circuit, replace lamp socket.

INSTALLATION

	LOCATION	ITEM	ACTION REMARKS
1.	Power indicator neon lamp	Lamp socket (4)	Put in place.
2.		Leads (6) and screws (5)	Remove tags. Install leads and tighten screws.
3.		Lamp socket (4)	Put in place.
4.		Cover (3) and screws (2)	Using flat-tip screwdriver, install.
5.		Porcelain ring (1)	Install.



4-21. TESTING POWER CABLE.

TOOLS: Multimeter AN/USM-223

EQUIPMENT CONDITION: Power cable removed.

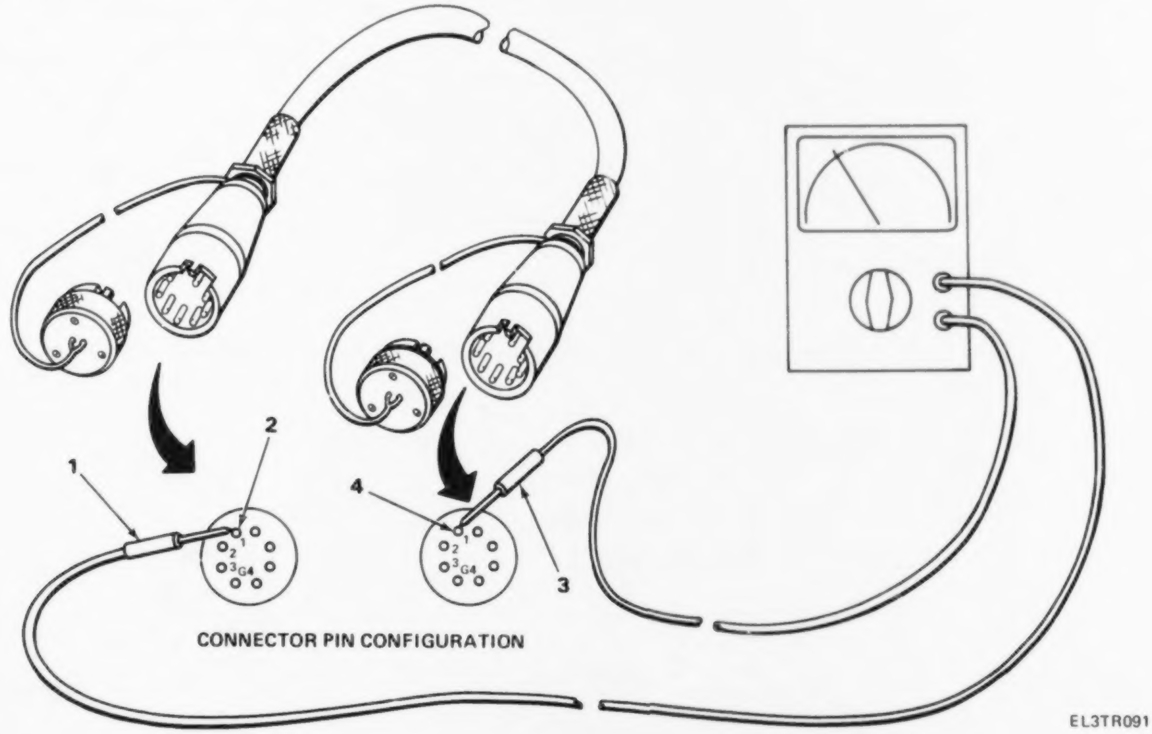
NOTE

On both ends of power cable each receptacle pin is numbered. To check continuity, touch the same numbered pin on each receptacle.

	LOCATION	ITEM	ACTION **REMARKS**
1.	Receptacle	Multimeter black probe (1) and pin 1 (2)	Touch black probe to pin.
2.	Opposite receptacle	Multimeter red probe (3) and pin 1 (4)	Touch red probe to pin.

NOTE

Multimeter should indicate continuity each time the same pins are touched on each end of power cable. Repeat steps 1 and 2 for pins 2 and G4. If multimeter indicates an open circuit, refer to a higher level of maintenance.



4-22. TESTING SIGNAL CABLE.

TOOLS: Multimeter AN/USM-223

EQUIPMENT CONDITION: Signal cable removed.

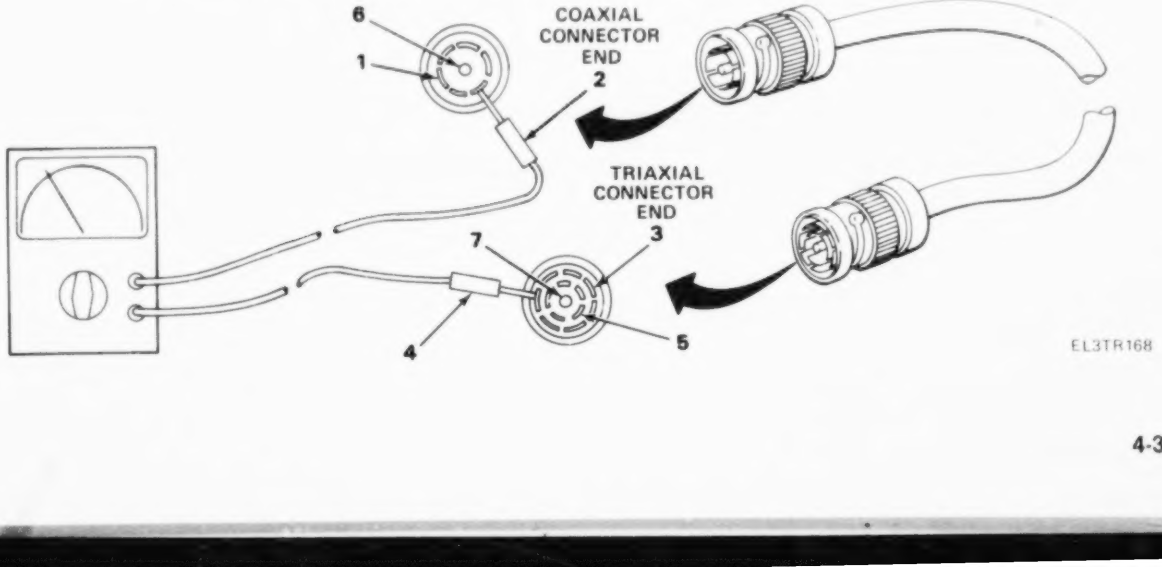
NOTE

Signal cables may have two triaxial or two coaxial connectors. The signal cable shown in this procedure has one connector of each type. In this type of cable, both concentric shield portions of the triaxial connector are attached to the single shield in the coaxial connector.

	LOCATION	ITEM	ACTION **REMARKS**
1.	Coaxial connector	Shield (1) and multimeter black probe (2)	Touch black probe to shield.
2.	Triaxial connector	Outside shield (3) and multimeter red probe (4)	Touch red probe to shield. **Multimeter should indicate continuity.**
3.		Red probe (4) and inside shield (5)	Touch red probe to shield. **Multimeter should indicate continuity.**
4.	Coaxial connector	Black probe (2) and pin (6)	Touch black probe to pin.
5.	Triaxial connector	Red probe (4) and pin (7)	Touch red probe to pin. **Multimeter should indicate continuity.**

NOTE

If multimeter indicates an open circuit, refer to a higher level of maintenance.



4-23. TESTING AC VOLTMETER.

TOOLS: Multimeter AN/USM-223

EQUIPMENT CONDITION: Power on and power distribution panel open.

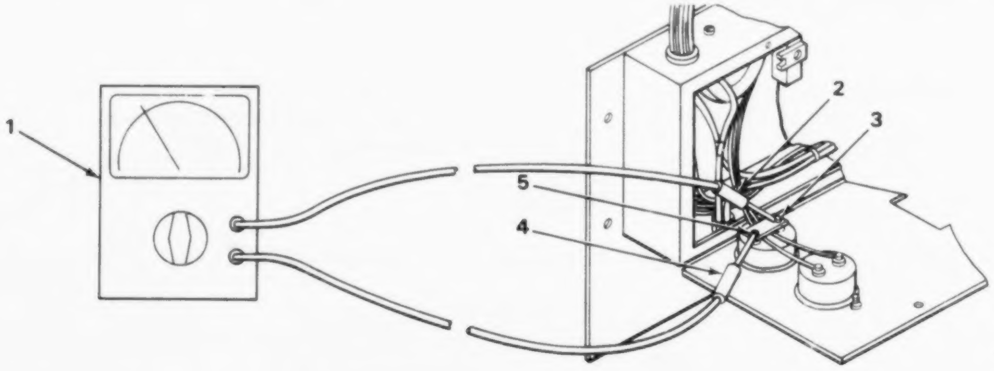
WARNING

High voltage is used in the power distribution panel. Death on contact can result if electrical leads are touched during voltage tests.

	LOCATION	ITEM	ACTION REMARKS
1.		Multimeter (1)	Set multimeter for ac voltage test.
2.	AC voltmeter	Multimeter probe (2) and black lead (3)	Touch red probe to terminal with black lead.
3.		Multimeter probe (4) and white lead (5)	Touch black probe to terminal with white lead.

NOTE

If 115 vac is indicated on multimeter, replace ac voltmeter. See paragraph 4-10.



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4-24. TESTING COMMUNICATIONS EQUIPMENT.

For testing communications equipment, refer to the appropriate TM listed in appendix A.

Section V PREPARATION FOR STORAGE OR SHIPMENT

Subject	Para	Page
General	4-25	4-40
Preparation for Storage or Shipment	4-26	4-40

4-25. GENERAL.

Before moving the facility, place all loose items in storage cabinets. Secure all equipment with straps. Secure all drawers, cabinet doors, and files with locks or fasteners. See paragraph 2-11 for further instructions in preparing the facility for movement.

4-26. PREPARATION FOR STORAGE OR SHIPMENT.

Perform preparation for movement on the following equipment:

Exhaust blower
Ladder
Grounding strap
Power cable

NOTE

If the facility is to be stored for a prolonged time, or shipped long distance, refer to TM 740-90-1 and TM 38-230-2 for storage and packaging of equipment.

EXHAUST BLOWER STORAGE

There are two exhaust blower assemblies. Storage procedures are the same for both blower assemblies. Only one procedure is given. See paragraph 4-18 for exhaust blower removal procedure.

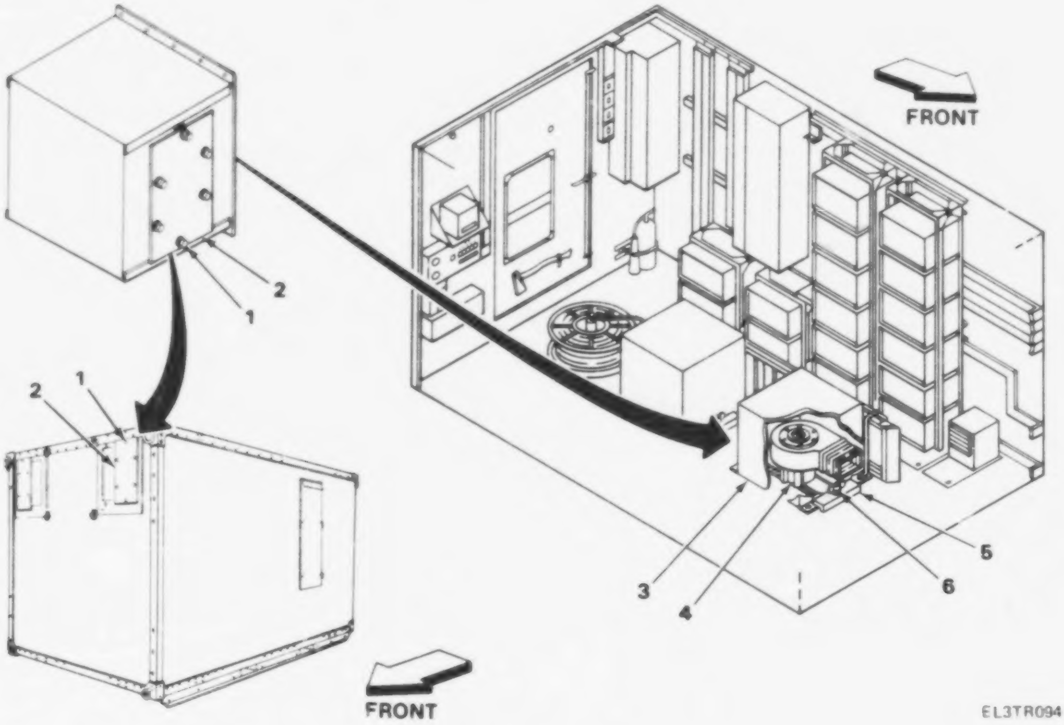
EQUIPMENT CONDITION: Terminal set operational.

	LOCATION	ITEM	ACTION **REMARKS**
1.	Blower box cover mounting bracket	Six screws (1)	Using 1/2-inch wrench, remove. **Save.**
2.		Cover (2)	Remove.
3.	Facility blower port	Cover (2)	Put in place.

4-26. PREPARATION FOR STORAGE OR SHIPMENT. (CONT)

EXHAUST BLOWER STORAGE (CONT)

	LOCATION	ITEM	ACTION **REMARKS**
4.	Blower port cover	Six screws (1)	Using 1/2-inch wrench, install.
5.	Center floor	Blower box (3) and blower assembly (4)	Place inside facility in storage position.
6.		Two brackets (5)	Put in place.
7.		Two holddown bolts (6)	Install.

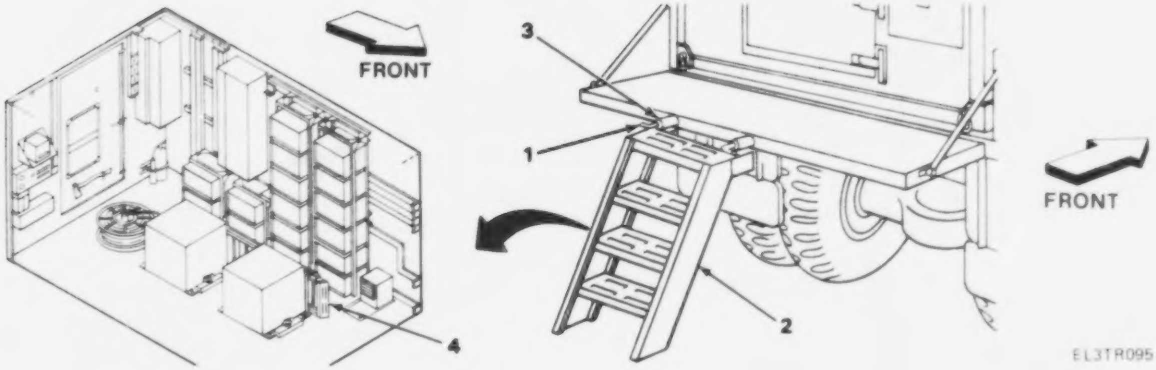


4-26. PREPARATION FOR STORAGE OR SHIPMENT. (CONT)

LADDER STORAGE

EQUIPMENT CONDITION: Shelter mounted on truck.

	LOCATION	ITEM	ACTION REMARKS
1.	Facility entrance	Latches (1)	Unlock.
2.		Ladder (2) and latch receptacle (3)	Remove from receptacle.
3.	Floor	Ladder (2)	Put in place.
4.		Strap (4)	Place around ladder and secure.



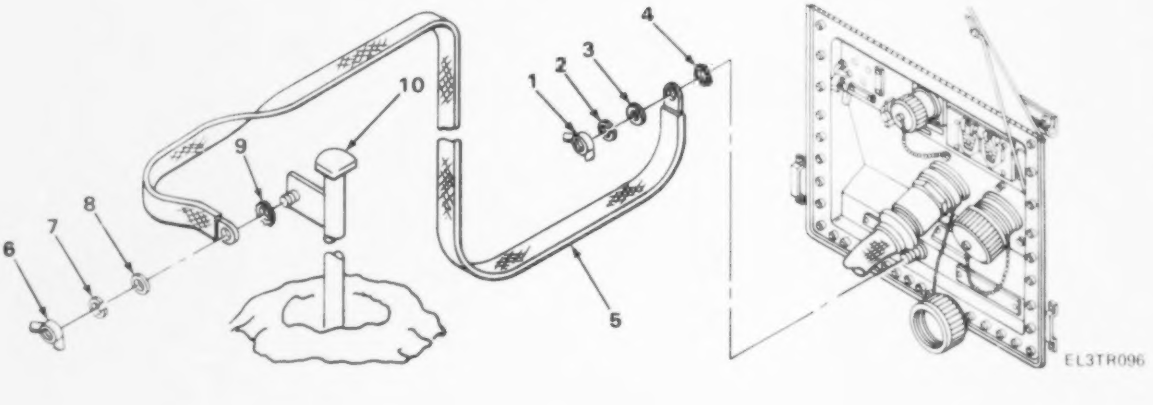
4-26. PREPARATION FOR STORAGE OR SHIPMENT. (CONT)

DISCONNECTING AND STORING GROUNDING STRAP

WARNING

External power supply must be shut down to prevent electrical shock to personnel.

	LOCATION	ITEM	ACTION	**REMARKS**
1.	Power entrance box	Wingnut (1), lockwasher (2), flat washer (3), star washer (4) and ground strap (5)	Remove.	**Replace hardware on power entrance box grounding lug.**
2.	Ground rod	Wingnut (6), lockwasher (7), flat washer (8), star washer (9) and ground strap (5)	Remove.	
3.		Ground strap (5)	Place into storage.	
4.	Outside facility	Ground rod (10)	Remove.	**Place in mounting brackets on curbside wall of facility.**



4-26. PREPARATION FOR STORAGE OR SHIPMENT. (CONT)

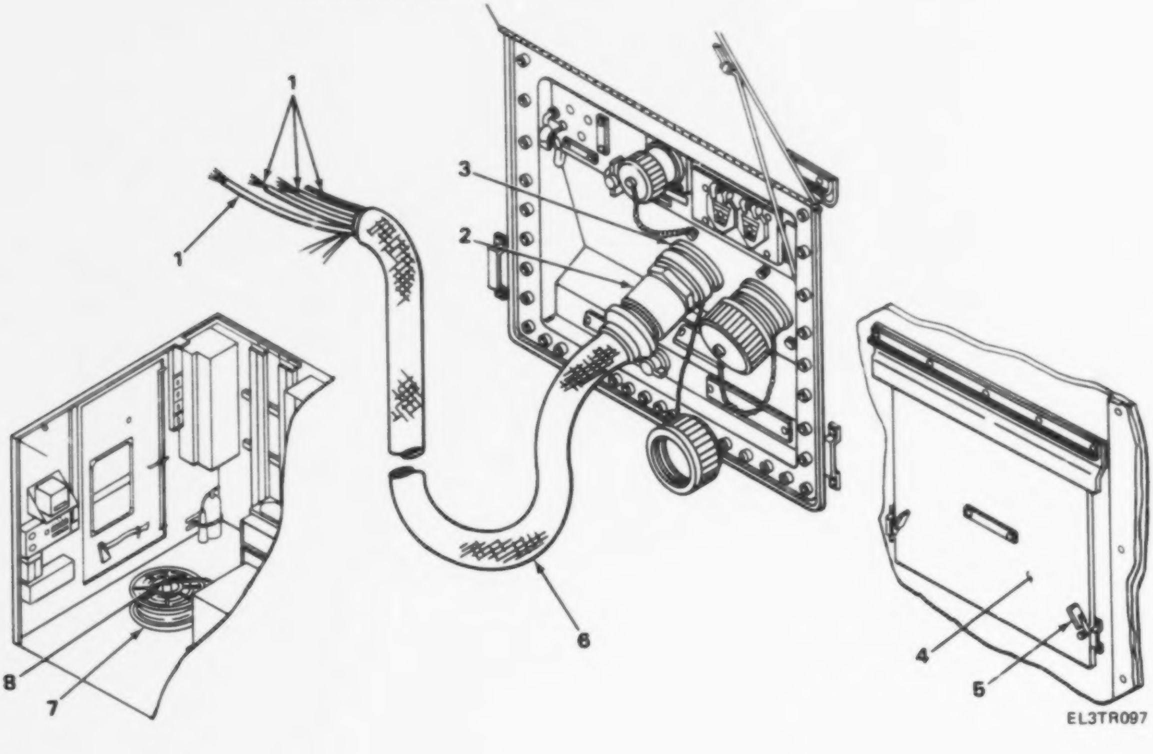
DISCONNECTING AND STORING POWER CABLES

There are two power cables. Storage procedures for both cables are the same. Only one procedure is given.

PERSONNEL REQUIRED: Two technicians

EQUIPMENT CONDITION: Grounded strap removed.

	LOCATION	ITEM	ACTION **REMARKS**
1.	Power cable	Lead terminals (1)	Remove from power source.
2.	Power entrance box	Cable plug (2) and receptacle (3)	Remove cable plug from receptacle.
3.		Power entrance box cover (4) and latches (5)	Close and secure.
4.	Cable reel	Cable (6) and cable reel (7)	Wind onto reel.
5.	Center floor	Cable reel (7) and holddown bolt (8)	Put in place and secure.



CHAPTER 5

DIRECT SUPPORT MAINTENANCE

Subject	Section	Page
Repair Parts, Special Tools, TMDE, and Support Equipment	I	5-1
Direct Support Troubleshooting	II	5-1
Maintenance Procedures	III	5-4

OVERVIEW

This chapter contains direct support troubleshooting and maintenance procedures for the AN/TCC-73(*) facility.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Subject	Para	Page
Common Tools and Equipment	5-1	5-1
Special Tools, TMDE, and Support Equipment	5-2	5-1
Repair Parts	5-3	5-1

5-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for each maintenance procedure are listed in the Initial Setup section of each maintenance task. A complete listing is shown in the Maintenance Allocation Chart listed in appendix B.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

There are no special tools or equipment needed to maintain the facility.

5-3. REPAIR PARTS.

Repair parts for the direct support maintenance of the facility are listed and illustrated in the repair parts, and special tools list of TM 11-5805-585-24P.

Section II DIRECT SUPPORT TROUBLESHOOTING

Subject	Para	Page
General	5-4	5-2
Symptom Index		5-2
Troubleshooting Table		5-3

5-4. GENERAL.

The troubleshooting table lists malfunctions which may occur when operating the equipment. However, the troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to a higher level of maintenance.

If the troubleshooting steps given and the schematics found in the back of the manual do not solve your problem, report it to a higher level of maintenance.

When working on any problem, be sure to report your work on the forms shown in TM 38-750.

To use the troubleshooting table, first find your problem in the symptom index. The symptom index is organized by component and problems associated with each component. The index will give you a page number on which you will find your problem and the possible corrections. Turn to that page, find your problem, and use the procedures shown to correct it.

SYMPTOM INDEX

FACILITY

	Page
EXHAUST BLOWER	
Fails to operate	5-3
AC POWER	
No ac power available inside facility, power cable is good	5-3
No ac power available inside facility, power receptacle is good	5-3
SIGNAL ENTRANCE BOX	
No input signals available from signal entrance box, all connections and cabling are good	5-3

TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

FACILITY

1. Exhaust blower does not operate.

Step 1. Check for bad power cord. See paragraph 5-6.

Replace bad power cord. See paragraph 5-6.

Step 2. Check for cracked, jammed or broken blower impeller. See paragraph 5-7.

Replace bad blower impeller. See paragraph 5-7.

Step 3. Check for bad exhaust blower motor. See paragraph 5-8.

Replace bad blower motor. See paragraph 5-8.

2. No ac power available inside facility, and power cable is good.

Perform a continuity test on power receptacle.

Replace bad power receptacle. See paragraph 5-9.

3. No ac power available inside facility, and power receptacle is good.

Check for bad power cable connector. See paragraph 5-10.

Replace bad power cable connector. See paragraph 5-10.

4. No input signals available from signal entrance box, and all connections and cabling are good.

Check for bad electrical surge arrestor.

Replace bad electrical surge arrestor. See paragraph 5-11.

Section III MAINTENANCE PROCEDURES

Subject	Para	Page
General	5-5	5-4
Testing and Replacement of Exhaust Blower Assembly Power Cord	5-6	5-4
Inspection and Replacement of Exhaust Blower Assembly Impeller	5-7	5-8
Replacement of Exhaust Blower Assembly Motor	5-8	5-10
Replacement of Power Receptacle	5-9	5-12
Repair and Replacement of Power Cable Connector	5-10	5-14
Replacement of Electrical Surge Arresters F-1483/G and F-1495/G	5-11	5-16

5-5. GENERAL.

This section provides instructions for Direct Support Maintenance of the AN/TCC-73(*). The following initial setup information applies to all procedures:

Resources required are not listed unless they apply to the procedure. Tool Kit, Electronic Equipment TK-105/G is needed for all procedures and tools are not listed unless they are not contained in kit.

Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment Condition is not listed unless some other condition is required.

5-6. TESTING AND REPLACEMENT OF EXHAUST BLOWER ASSEMBLY POWER CORD.

Replacement is the same for roadside and curbside power cords.

TOOLS: Multimeter AN/USM-223

MATERIALS/PARTS: Power cord

EQUIPMENT CONDITION: Exhaust blower assembly removed. (See para 4-8.)

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Motor	Four screws (1) and cover (2)	Using flat-tip screwdriver, remove.
2. Cable clamp	Screws (3)	Using flat-tip screwdriver, loosen.

5-6. TESTING AND REPLACEMENT OF EXHAUST BLOWER ASSEMBLY POWER CORD. (CONT)

	LOCATION	ITEM	ACTION REMARKS
REMOVAL (CONT)			
1.	Motor	Cover (2)	Slide down power cord.
2.	Motor wires	Connectors (4)	Using wire cutters, remove. **Cut wires close to connector.**
3.	Motor	Power cord (5)	Remove.
4.	Power cord	Cover (2)	Remove.
TESTING			
1.	Workbench	Multimeter (6)	Set multimeter for continuity test.
2.	Power cord	Multimeter probe (7) and red lead (8)	Touch red probe to end of white lead.
3.		Multimeter probe (9) and terminal plug end (10)	Touch black probe to terminal end of plug that lead attaches to.

NOTE

Perform steps 8 and 9 for all three leads. If multimeter indicates open circuit, replace power cord. If multimeter indicates continuity for all three leads, see power assembly motor replacement paragraph 5-8.

	LOCATION	ITEM	ACTION REMARKS
INSTALLATION			
1.	Motor wire cover	Power cord (5) and cable clamp (11)	Pull cord through clamp.
2.	Motor wires	Power cord (5)	Put in place.

5-6. TESTING AND REPLACEMENT OF EXHAUST BLOWER ASSEMBLY POWER CORD. (CONT)

INSTALLATION (CONT)

CAUTION

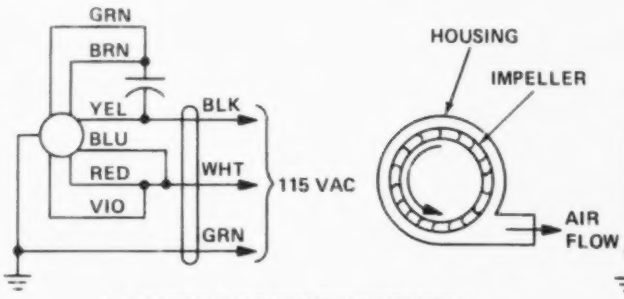
Roadside and curbside power cord wire connections are different. Connect power cord according to position of exhaust blower assembly.

NOTE

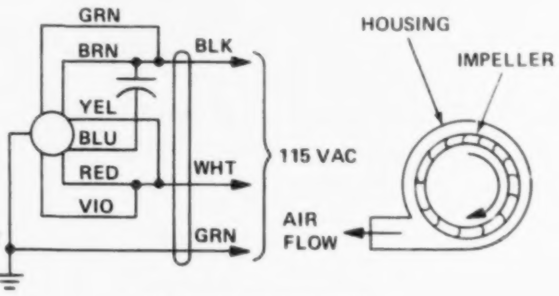
For roadside exhaust blower connections, connect green, brown, and yellow motor wires to black power cord wire. Connect blue, red, and violet motor wires to white power cord wire. Green power cord wire is grounded to cover screw.

For curbside exhaust blower connections, connect green, brown, and blue motor wires to black power cord wire. Connect yellow, red, and violet motor wires to white power cord wire. Green power cord wire is grounded to cover screw.

	LOCATION	ITEM	ACTION REMARKS
3.	Motor wires	Wires (12), connectors (4) and power cord (5)	Insert wires into connectors and crimp using crimping pliers.
4.	Power cord	Cover (2)	Slide up power cord.
5.	Cable clamp	Screws (3)	Using flat-tip screwdriver, install.
6.	Motor	Cover (2)	Put in place.
7.		Four screws (1)	Using flat-tip screwdriver, install. **Install exhaust blower assembly. (See para 4-18.)**


GRN
BRN
YEL
BLU
RED
VIO
BLK
WHT
GRN
115 VAC
HOUSING
IMPELLER
AIR FLOW

A. ROADSIDE (COUNTERCLOCKWISE).


GRN
BRN
YEL
BLU
RED
VIO
BLK
WHT
GRN
115 VAC
HOUSING
IMPELLER
AIR FLOW

B. CURBSIDE (CLOCKWISE).

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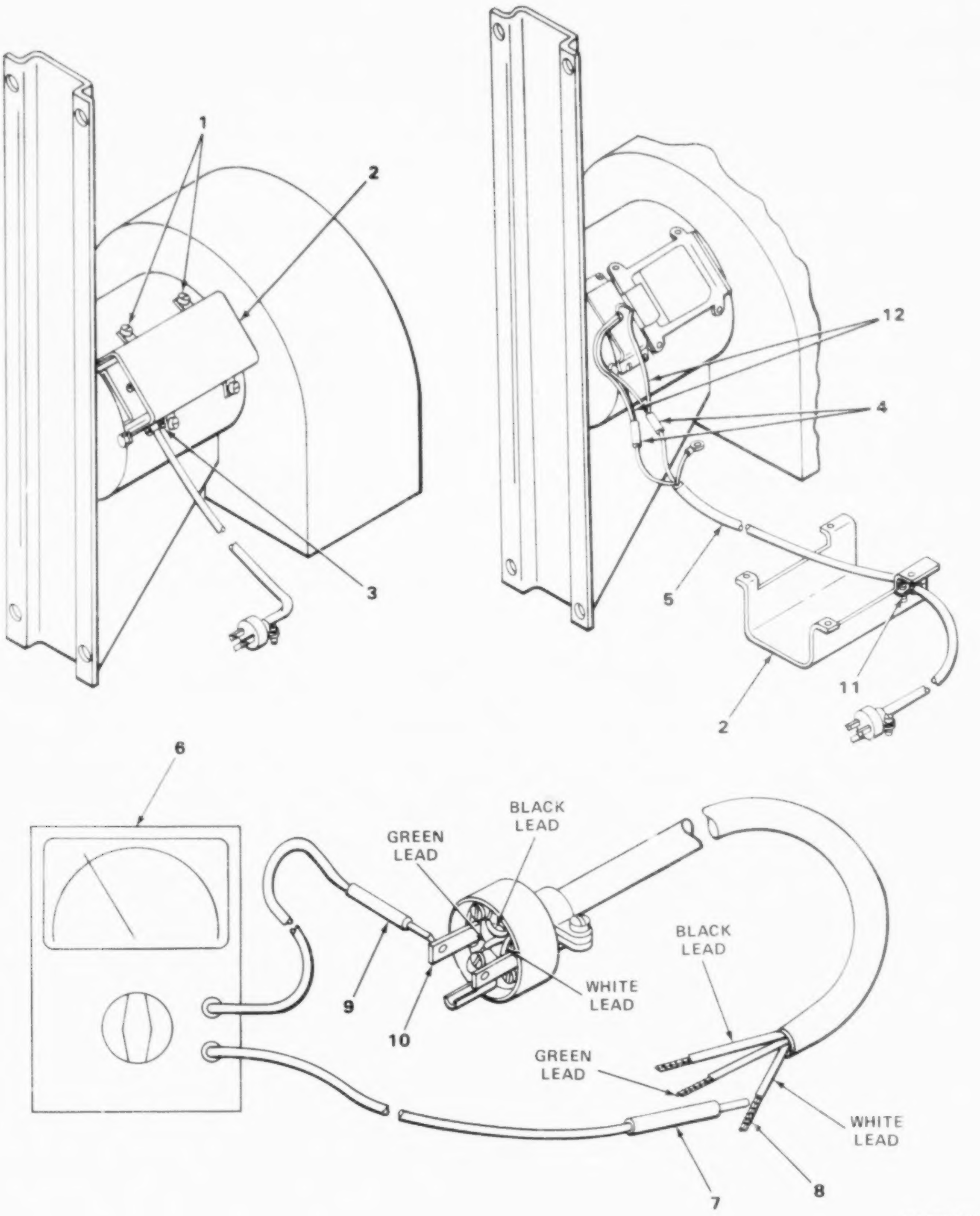
5-6. TESTING AND REPLACEMENT OF EXHAUST BLOWER ASSEMBLY POWER CORD. (CONT)


1
2
3
12
4
5
11
2
6
GREEN LEAD
BLACK LEAD
9
10
WHITE LEAD
BLACK LEAD
GREEN LEAD
WHITE LEAD
7
8

EL3TR103

5-7. INSPECTION AND REPLACEMENT OF EXHAUST BLOWER ASSEMBLY IMPELLER.

There are two blower assemblies. Each blower assembly contains an impeller. Removal procedures are the same for both. Only roadside is given.

MATERIALS/PARTS: Impeller

EQUIPMENT CONDITION: Blower assembly removed. (See para 4-8.)

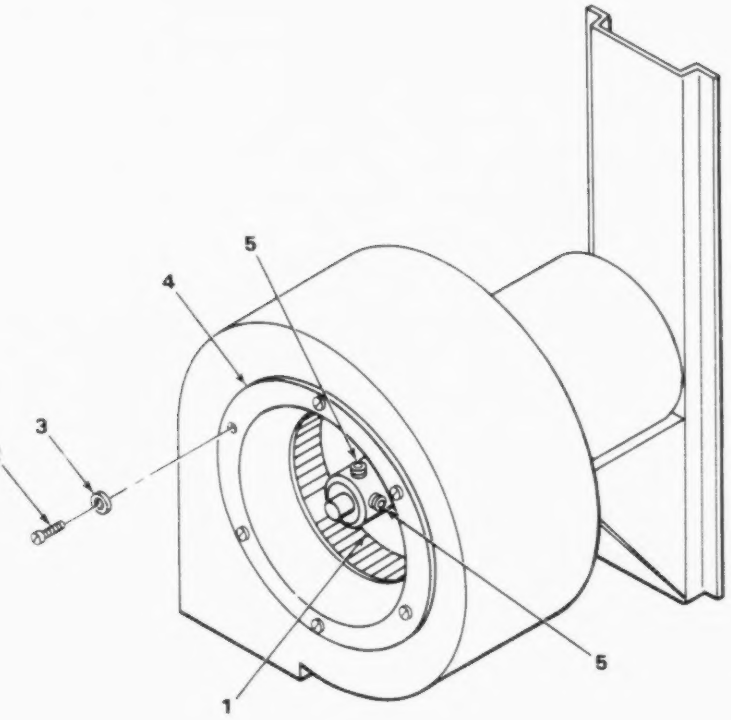
	LOCATION	ITEM	ACTION **REMARKS**
INSPECTION			
	Blower assembly	Impeller (1)	Inspect. **Inspect blower impeller to make sure that it is round, tight fitting and has no dents or broken fins.**

NOTE

If blower impeller is not round or tight fitting or has dents or broken fins, replace.

REMOVAL			
1.	Impeller side of blower assembly	Six screws (2), six washers (3) and ring (4)	Using flat-tip screwdriver, remove.
2.	Impeller	Setscrews (5)	Using hex wrench, loosen.
3.	Motor shaft	Impeller (1)	Remove.
INSTALLATION			
1.	Motor shaft	Impeller (1)	Install.
2.	Impeller	Setscrews (5)	Using hex wrench, tighten.
3.	Impeller side of blower assembly	Ring (4)	Put in place.
4.		Six screws (2) and six washers (3)	Using flat-tip screwdriver, install. **Install exhaust blower assembly. (See para 4-18.)**

5-7. INSPECTION AND REPLACEMENT OF EXHAUST BLOWER ASSEMBLY IMPELLER. (CONT)



EL3TR104

5-8. REPLACEMENT OF EXHAUST BLOWER ASSEMBLY MOTOR.

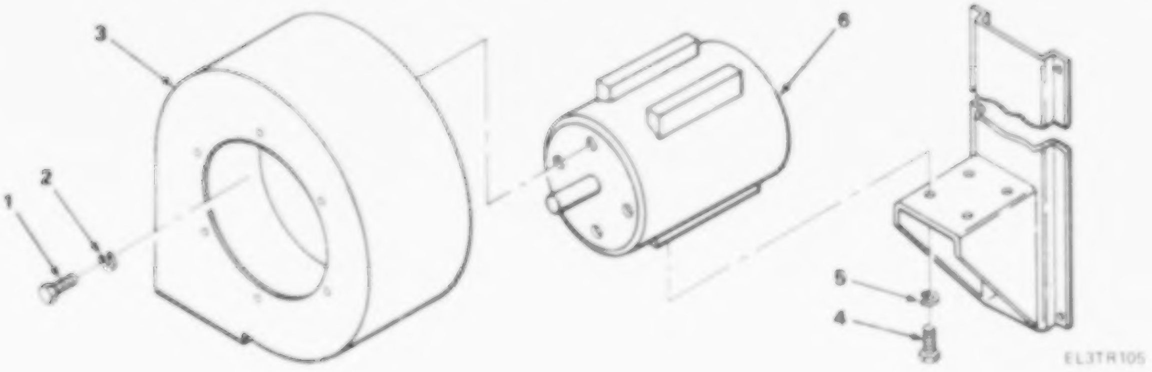
Replacement is the same for roadside and curbside exhaust blower assembly motors. Only roadside is given.

MATERIALS/PARTS: Blower motor

EQUIPMENT CONDITION: Exhaust blower removed. (See para 4-8.)
Power cord removed. (See para 5-6.)
Impeller removed. (See para 5-7.)

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	Shroud	Four screws (1) and four lockwashers (2)	Using 1/2-inch wrench, remove.
2.	Motor	Shroud (3)	Remove.
3.		Four screws (4) and four lockwashers (5)	Using 9/16-inch wrench, remove.
4.	Mount	Motor (6)	Remove.
INSTALLATION			
1.	Mount	Motor (6)	Put in place.
2.		Four screws (4) and four lockwashers (5)	Using 9/16-inch wrench, install.
3.	Motor	Shroud (3)	Put in place.
4.	Shroud	Screws (1) and lockwashers (2)	Using 1/2-inch wrench, install. **Install impeller. (See para 5-7.)** **Install power cord. (See para 5-6.)** **Install exhaust blower assembly. (See para 4-18.)**

5-8. REPLACEMENT OF EXHAUST BLOWER ASSEMBLY MOTOR. (CONT)


3
6
2
1
5
4
EL3TR105

5-9. REPLACEMENT OF POWER RECEPTACLE.

MATERIALS/PARTS: Power receptacle

EQUIPMENT CONDITION: Power cable removed and power entrance box open with covers removed from receptacle.

	LOCATION	ITEM	ACTION REMARKS

REMOVAL

WARNING

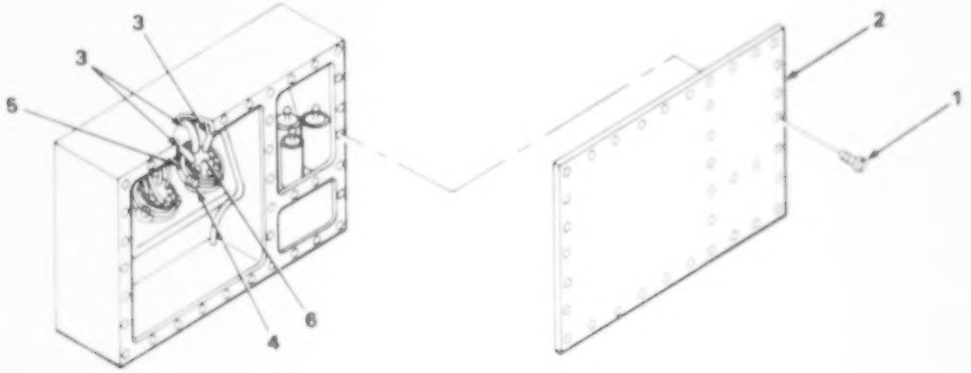
Power must be off to prevent electrical shock to personnel.

	LOCATION	ITEM	ACTION REMARKS
1.	Rear of power entrance box	41 screws (1) and cover (2)	Using flat-tip screwdriver, remove.
2.	Inside power entrance box	Leads (3)	Tag leads. Using soldering iron, unsolder.
3.		Three screws (4) and clamping ring (5)	Using flat-tip screwdriver, remove.
4.	Front of power entrance box	Power receptacle (6)	Remove.

INSTALLATION

	LOCATION	ITEM	ACTION REMARKS
1.	Front of power entrance box	Power receptacle (6)	Put in place.
2.	Inside of power entrance box	Clamping ring (5) and three screws (4)	Using flat-tip screwdriver, install.
3.		Leads (3)	Remove tags. Using soldering iron, solder.
4.	Rear of power entrance box	Cover (2) and 41 screws (1)	Using flat-tip screwdriver, install.

5-9. REPLACEMENT OF POWER RECEPTACLE. (CONT)



EL3TR106

5-10. REPAIR AND REPLACEMENT OF POWER CABLE CONNECTOR.

MATERIALS/PARTS: Power cable connector, NSN 5935-00-064-5731

EQUIPMENT CONDITION: Power cable removed and on workbench.

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	End of cable	Gland nut (1), and gland housing (2)	Using wrench, unscrew nut. Slide gland housing down cable.
2.		Cap (3)	Unscrew cap.
3.		Inserts (4), body (5) and shell (6)	Remove.
4.		Cable (7)	Slide through gland housing to give slack.
5.	Contacts	Wires (8)	Tag leads. Using soldering iron, unsolder.
6.		Gland housing (2) and gland nut (1)	Remove.
REPAIR			
1.	End of cable	Wires (8) and cable (7)	Using wire stripper, remove about 5/8 in. of insulation from leads.
2.		Contacts (9)	Using soldering iron, solder leads to contacts.

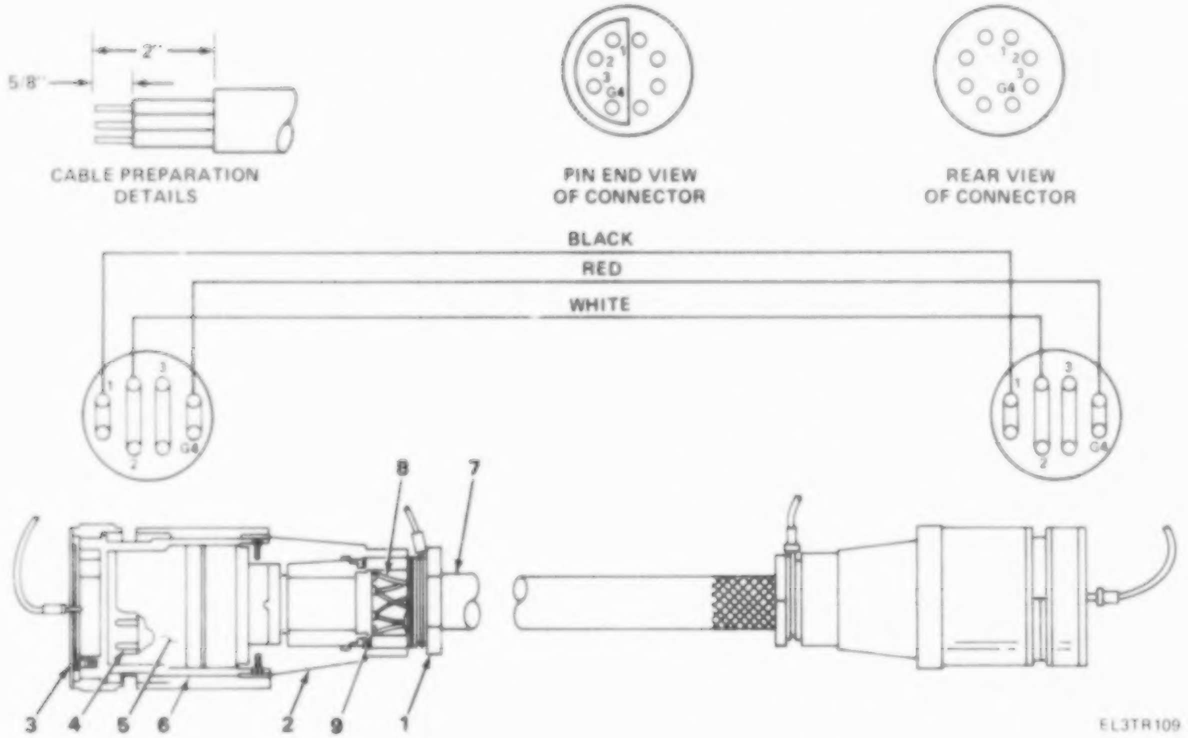
NOTE

Be sure the proper leads are soldered to the proper contacts.

INSTALLATION			
1.	End of cable	Gland housing (2) and gland nut (1)	Replace.
2.	Contacts	Wires (8)	Remove tags. Using soldering iron, solder.
3.		Cable (7)	Pull through housing. Take up slack.
4.		Shell (6), body (5), and inserts (4)	Install.

5-10. REPAIR AND REPLACEMENT OF POWER CABLE CONNECTOR. (CONT)

LOCATION	ITEM	ACTION REMARKS
INSTALLATION (CONT)		
5.	Cap (3)	Install ring. Screw on cap.
6.	Gland housing (2) and gland nut (1)	Slide gland housing in place. Install gland nut.


2"
5/8"
CABLE PREPARATION DETAILS
1
2
3
G4
PIN END VIEW OF CONNECTOR
1
2
3
G4
REAR VIEW OF CONNECTOR
BLACK
RED
WHITE
1
2
3
G4
1
2
3
G4
8
7
3
4
5
6
2
9
1
EL3TR109

5-11. REPLACEMENT OF ELECTRICAL SURGE ARRESTERS F-1483/G AND F-1495/G.

There are two signal entrance panels each containing four electrical surge arresters. Replacement procedures for all eight electrical surge arresters are the same. Only one is given.

MATERIALS/PARTS: Electrical surge arrester

EQUIPMENT CONDITION: MAIN circuit breaker set to OFF.
Signal entrance panel output cable disconnected.

REMOVAL

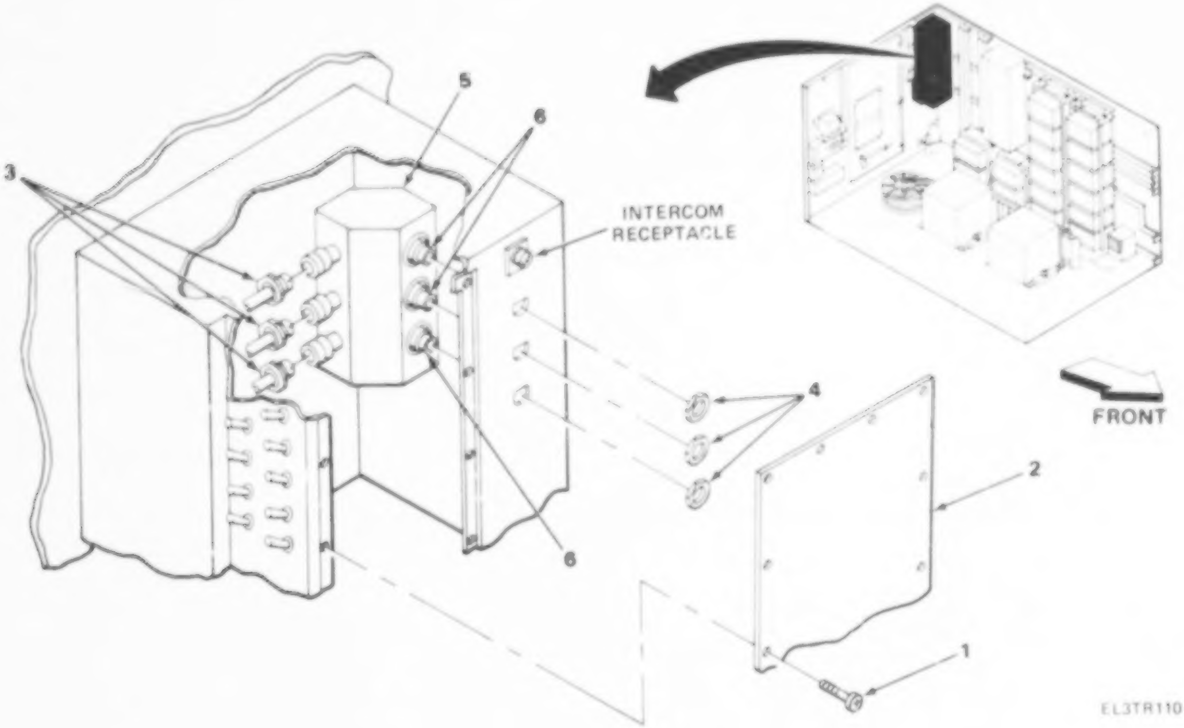
WARNING

Surge Arresters F-1483/G and F-1495/G contain radioactive materials. Use extreme caution when installing or removing arresters from facility. Dispose of surge arresters in accordance with AR 755-15.

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	Signal entrance panel	Eighteen screws (1) and cover (2)	Using flat-tip screwdriver, remove.
2.	Electrical surge arrester	Leads (3)	Tag leads and remove.
3.		Nuts (4)	Using wrench, remove.
4.	Signal entrance panel	Electrical surge arrester (5)	Remove.
INSTALLATION			
1.	Electrical surge arrester	RFI gaskets (6)	Install.
2.	Power entrance panel	Electrical surge arrester (5)	Put in place.
3.	Electrical surge arrester	Nuts (4)	Using wrench, install.
4.	Electrical surge arrester	Leads (3)	Remove tags and install.
5.	Signal entrance panel	Cover (2)	Put in place.

5-11. REPLACEMENT OF ELECTRICAL SURGE ARRESTERS F-1483/G AND F-1495/G. (CONT)

LOCATION	ITEM	ACTION REMARKS
INSTALLATION (CONT)		
6. Signal entrance panel	Eighteen screws (1)	Using flat-tip screwdriver, install.


5
6
3
INTERCOM RECEPTACLE
4
FRONT
2
6
1
EL3TR110

CHAPTER 6

GENERAL SUPPORT MAINTENANCE

Subject	Section	Page
Repair Parts, Special Tools, TMDE, and Support Equipment	I	6-1
General Support Troubleshooting	II	6-2
Maintenance Procedures	III	6-2

OVERVIEW

This chapter contains general support maintenance for the terminal set.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Subject	Para	Page
Common Tools and Equipment	6-1	6-1
Special Tools, TMDE, and Support Equipment	6-2	6-1
Repair Parts	6-3	6-1

6-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for each maintenance procedure are listed in the Initial Setup section of each maintenance task. A complete listing is shown in the Maintenance Allocation Chart in appendix B of this manual.

6-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

There are no special tools or equipment needed to maintain the facility.

6-3. REPAIR PARTS.

Repair parts for general support maintenance of the facility are listed and illustrated in the repair parts and special tools list in TM 11-5805-585-24P.

Section II GENERAL SUPPORT TROUBLESHOOTING

Subject	Para	Page
General	6-4	6-2
Troubleshooting 26-Pair Signal Cable	6-5	6-2

6-4. GENERAL.

If the troubleshooting information given and the schematics found in the back of the manual do not solve your problem, report it to a higher level of maintenance.

When working on any problem, be sure to report your work on the forms shown in TM 38-750.

6-5. TROUBLESHOOTING 26-PAIR SIGNAL CABLE.

During normal operation, a particular channel on a system does not operate. Performing a systems loopback check indicates the local and distant facilities are operating normally and the problem lies between the two terminals which are connected by a 26-pair signal cable. Visual inspection of the 26-pair cable shows no faults. Perform a continuity test given in paragraph 6-7 to determine if a bad 26-pair signal cable exists.

Section III MAINTENANCE PROCEDURES

Subject	Para	Page
General	6-6	6-2
Testing of 26-Pair Signal Cable	6-7	6-3
Removal, Repair, and Installation of 26-Pair Receptacle	6-8	6-4
Removal, Repair, and Installation of 26-Pair Cable Connector	6-9	6-7

6-6. GENERAL.

This section provides instructions for General Support mintenance of the AN/TCC-73(*). The following initial setup information applies to all procedures:

Resources required are not listed unless they apply to the procedure. Tool Kit, Electronic Equipment TD-105/G is needed for all procedures, and tools are not listed unless they are not contained in kit. Personnel are listed only if the task requires more than one technician. If Personnel Required is not listed, one technician can do the task.

The normal standard equipment condition to start a maintenance task is power off. Equipment Condition is not listed unless one other condition is required.

6-7. TESTING 26-PAIR SIGNAL CABLE.

TOOLS: Multimeter AN/USM-223

EQUIPMENT CONDITION: Covers removed from both ends of signal cable connectors.

	LOCATION	ITEM	ACTION **REMARKS**

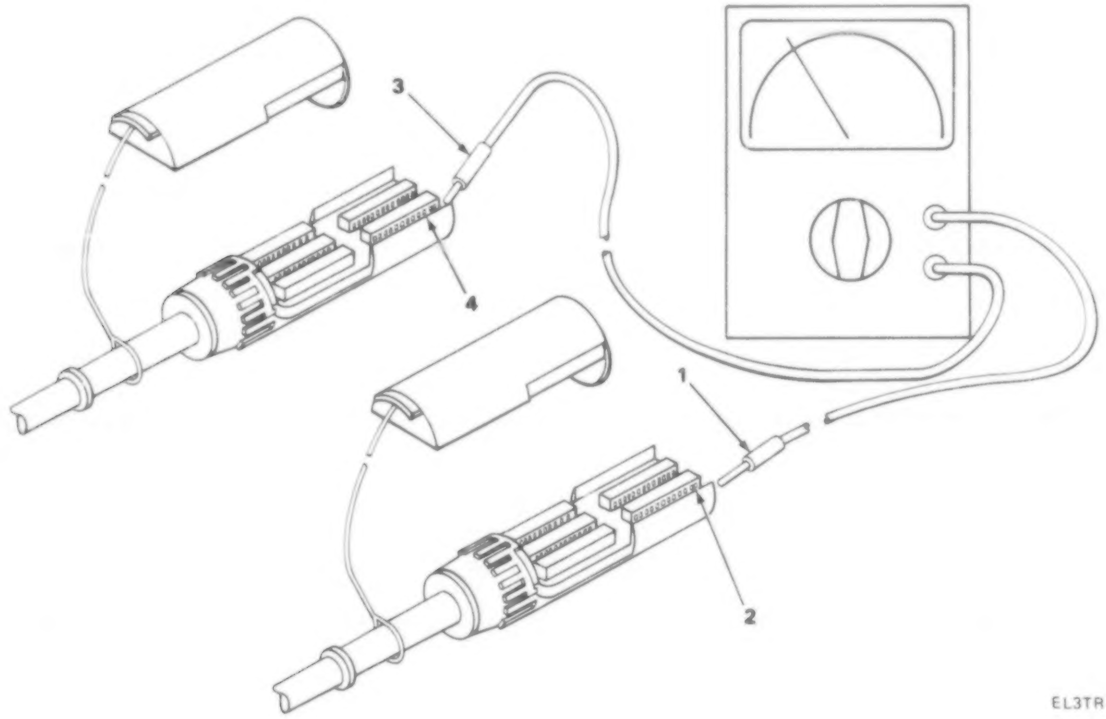
NOTE

Each receptacle contact is numbered on both ends of signal cable. To check continuity, touch the same numbered contact on each receptacle.

1.	Receptacle	Multimeter black probe (1) and contact (2)	Touch black probe to contact.
2.	Opposite receptacle	Multimeter red probe (3) and contact (4)	Touch red probe to contact.

NOTE

Multimeter should read continuity each time the same contacts are touched. Do steps 1 and 2 for all contacts. If multimeter shows an open connection on the 26-pair signal cable, see paragraph 6-8 for repair of the 26-pair cable connector.



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6-8. REMOVAL, REPAIR, AND INSTALLATION OF 26-PAIR RECEPTACLE.

There are two signal entrance boxes and one video entrance box. Each signal entrance box contains four 26-pair receptacles and the monitor entrance box contains two. Removal and installation procedures for each 26-pair receptacle is the same.

MATERIALS/PARTS: 26-pair receptacle

EQUIPMENT CONDITION: Signal entrance box cover opened. 26-pair receptacle cover removed.

	LOCATION	ITEM	ACTION **REMARKS**
REMOVAL			
1.	Rear of signal entrance box	Eighteen screws (1) and cover (2)	Using flat-tip screwdriver, remove.

NOTE

For access to receptacles located behind cable rods, remove the two lower screws that secure the base of the rods, and pull rods out.

Note position of receptacle insert when removing it to install it properly.

	LOCATION	ITEM	ACTION **REMARKS**
2.		Screws (3)	Using flat-tip screwdriver, remove.
3.	Front of signal entrance panel	Receptacle insert (4) and housing (5)	Pull out of receptacle housing. **Note position of insert clip.**

NOTE

Inspect lead connections. If bad, see the repair procedures on page 6-7.

	LOCATION	ITEM	ACTION **REMARKS**
4.	Receptacle insert	Leads (6)	Tag leads. Using soldering iron, unsolder.

REPAIR

CAUTION

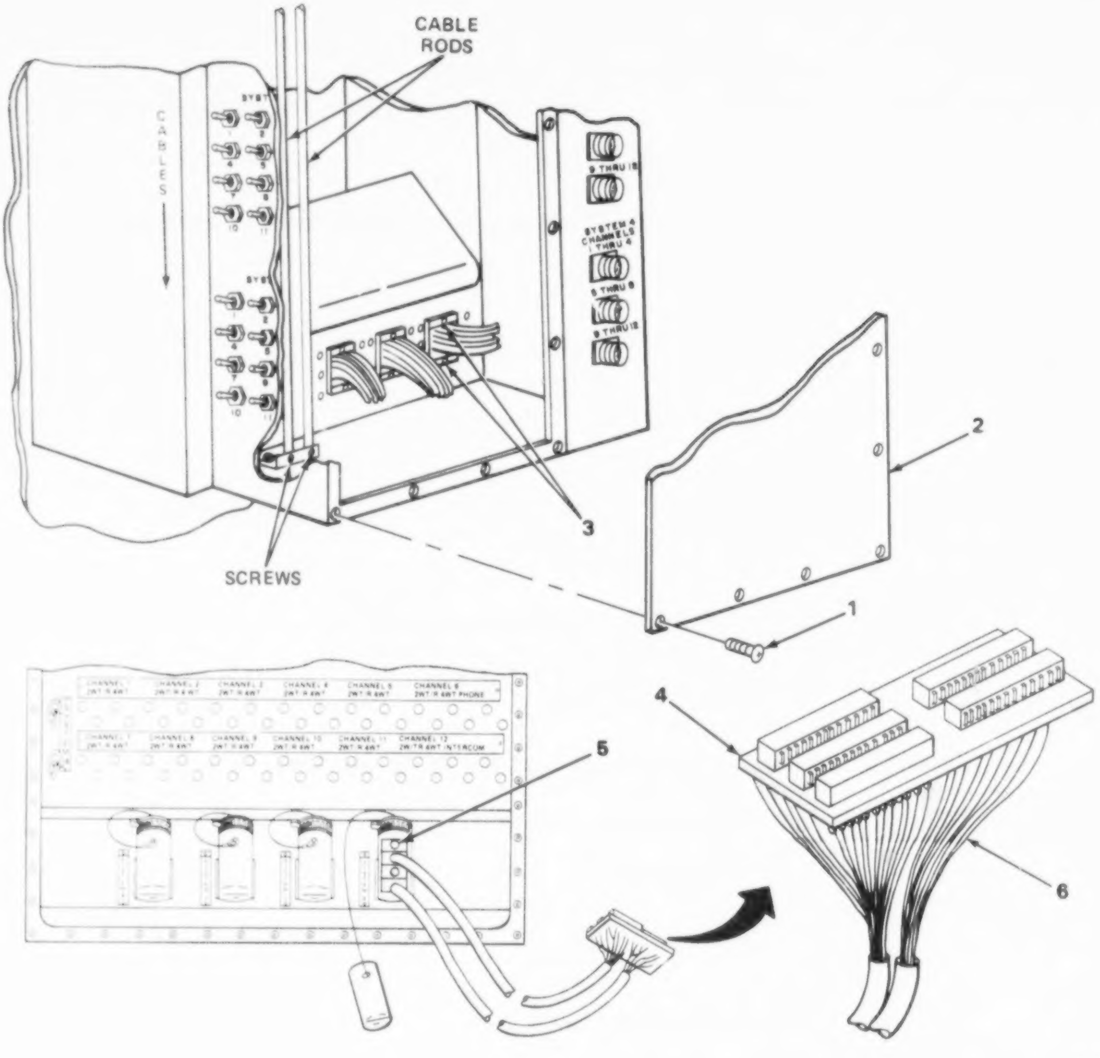
When connecting and soldering leads to receptacle insert, excessive heat or pressure will damage it.

NOTE

Inspect lead connections on receptacle insert. Solder any broken or loose connections.

	LOCATION	ITEM	ACTION **REMARKS**
	Receptacle insert	Leads (6)	Using soldering iron, solder broken leads.

6-8. REMOVAL, REPAIR, AND INSTALLATION OF 26-PAIR RECEPTACLE. (CONT)


CABLE RODS
CABLES
SYST
SYST
9 THRU 12
SYSTEM 4 CHANNELS 1 THRU 4
5 THRU 8
9 THRU 12
2
3
SCREWS
1
CHANNEL 1 2WT R 4WT
CHANNEL 2 2WT R 4WT
CHANNEL 3 2WT R 4WT
CHANNEL 4 2WT R 4WT
CHANNEL 5 2WT R 4WT
CHANNEL 6 2WT/R 4WT PHONE
CHANNEL 7 2WT R 4WT
CHANNEL 8 2WT R 4WT
CHANNEL 9 2WT R 4WT
CHANNEL 10 2WT R 4WT
CHANNEL 11 2WT R 4WT
CHANNEL 12 2W/TR 4WT INTERCOM
4
5
6

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6-8. REMOVAL, REPAIR, AND INSTALLATION OF 26-PAIR RECEPTACLE. (CONT)

INSTALLATION

	LOCATION	ITEM	ACTION **REMARKS**
1.	Receptacle insert	Leads (6)	Remove tags. Using soldering iron, solder.

CAUTION

Do not crimp or damage leads when setting receptacle insert into receptacle housing.

NOTE

Position receptacle insert into receptacle housing as noted in removal procedures on page 6-4.

	LOCATION	ITEM	ACTION **REMARKS**
2.	Receptacle housing	Receptacle insert (4)	Put in place.
3.	Receptacle insert	Screws (3)	Using flat-tip screwdriver, install.

NOTE

Put cable rods in place if removed, and install screws.

	LOCATION	ITEM	ACTION **REMARKS**
4.	Rear of signal entrance box	Cover (2)	Put in place.
5.		Eighteen screws (1)	Using flat-tip screwdriver, install.

6-9. REMOVAL, REPAIR, AND INSTALLATION OF 26-PAIR CABLE CONNECTOR.

MATERIALS/PARTS: 26-pair cable connector

EQUIPMENT CONDITION: Cover removed from 26-pair cable connector.

	LOCATION	ITEM	ACTION REMARKS
REMOVAL			
1.	Locking ring	Setscrew (1)	Using cross-tip screwdriver, loosen.
2.	Cable	Locking ring (2)	Slide back.
3.	Cable clamp	Two nuts (3) and two screws (4)	Using 3/8-inch wrench and cross-tip screwdriver, remove.
4.		Four screws (5)	Using cross-tip screwdriver, remove.
5.	Nylon insulator	Cable clamp (6)	Remove.
6.	Cable	Enforcement (7) and nylon insulator (8)	Slide back on cable.
7.	Cable connector	Screws (9)	Using flat-tip screwdriver, remove.

NOTE

Push cable into cable connector housing when lifting contact assembly.

Note position of cable connector when removing it to install it properly.

8.	Cable connector housing	Contact assembly (10)	Remove.

NOTE

Inspect lead connections. If bad, see repair procedures below.

9.	Contact assembly	Leads (11)	Tag leads. Using soldering iron, unsolder.
10.	Cable connector housing	Contact assembly (10)	Remove.

REPAIR

CAUTION

When connecting and soldering leads to the receptacle insert, excessive heat or pressure will damage it.

6-9. REMOVAL, REPAIR, AND INSTALLATION OF 26-PAIR CABLE CONNECTOR. (CONT)

REPAIR (CONT)

NOTE

Inspect lead connections on cable connector. Solder any broken or loose connections.

LOCATION	ITEM	ACTION REMARKS
Contact assembly	Leads (11)	Using soldering iron, solder broken leads.

INSTALLATION

LOCATION	ITEM	ACTION REMARKS
1. Contact assembly	Leads (11)	Remove tags. Using soldering iron, solder.

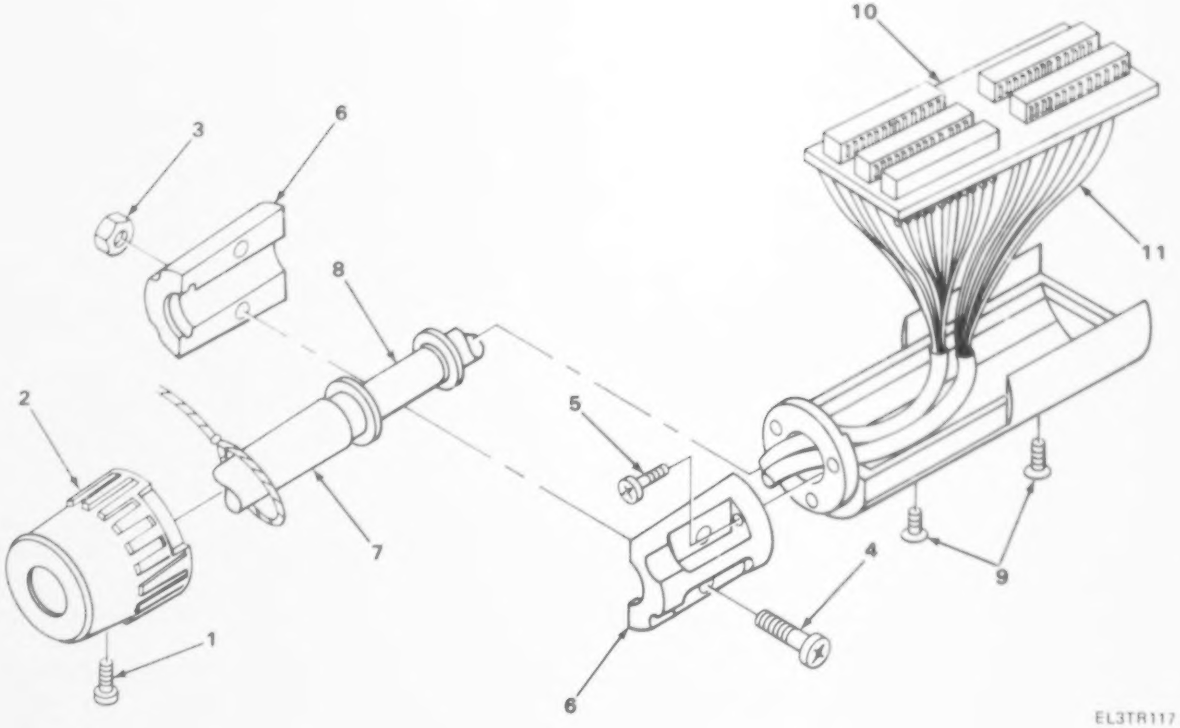
NOTE

Position cable assembly in cable assembly housing as noted in the removal procedures on page 6-7.

Lightly pull leads out of cable assembly housing to provide clearance for the contact assembly. Do not damage leads.

LOCATION	ITEM	ACTION REMARKS
2. Contact assembly housing	Contact assembly (10)	Put in place.
3. Cable connector	Screws (9)	Using flat-tip screwdriver, install.
4. Cable	Nylon insulator (8) and enforcement (7)	Slide up to housing.
5. Nylon insulator	Cable clamp (6)	Put in place.
6. Cable clamp	Four screws (5)	Using cross-tip screwdriver, install.
7.	Two screws (4) and two nuts (3)	Using 3/8-inch wrench and cross-tip screwdriver, install.
8. Cable	Locking ring (2)	Slide in place.
9. Locking ring	Setscrew (1)	Using cross-tip screwdriver, tighten.

6-9. REMOVAL, REPAIR, AND INSTALLATION OF 26-PAIR CABLE CONNECTOR. (CONT)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3
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APPENDIX A

REFERENCES

A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

A-2. FORMS.

Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1
Discrepancy in Shipment Report	SF 361
Report of Discrepancy (ROD)	SF 364
Quality Deficiency Report	SF 368

A-3. TECHNICAL MANUALS.

Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters	TB 43-0118
Maintenance and Repair Procedure for Shelters, Electrical Equipment S-141/G and S-141B/G (NSN 5410-00-752-9698), S-144/G, S-144A/G, S-144B/G, S-144C/G and S-144D/G (5410-00-542-2532), S-250/G (5410-00-999-4935), S-250/G (Shielded) (5410-00-489-6076), S-280/G (5410-00-999-5269), S-280A/G (5410-00-999-6022), S-280B/G (5410-00-117-2868), S-280B/G (Shielded) (5410-00-001-4093), S-280C/B and S-318/G (5410-00-763-2339) and S-318A/G (5410-00-116-7086)	TB 43-0124
Procedures for Safeguarding Accounting and Supply Control of COMSEC Material	TB 380-41
Painting, Replating and Preserving Instructions for Communications Security Equipment	TB 750-10
Alteration of Communications Security Equipment	TB 750-38

A-3. TECHNICAL MANUALS. (CONT)

Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manuals (Including Repair Parts and Special Tools List): Generator Sets, Gasoline and Diesel Engine Driven, Trailer Mounted, PU-236A/G, PU-236/G (NSN 6115-00-393-1709), PU-236B/G (6115-00-738-6334) PU-253A/U, PU-253/U (6115-00-697-2402), PU-304C/MPQ-4 (6115-00-056-8421) PU-332/G (6115-00-577-8471), PU-332A/G (6115-00-738-8336), PU-375A/G, PU-375/G (6115-00-753-2231), PU-375B/G (6115-00-931-6789), PU-401/M (6115-00-823-2217), PU-402/M (6115-00-722-3760), PU-406/M (6115-00-738-6342). PU-409/M (6115-00-702-3343), PU-409A/M (6115-00-733-6338), PU-495/G (6115-00-823-2218), PU-551/G (6115-00-889-1307), PU-564A/G (6115-00-728-6341), PU-564B/G (6115-00-179-2789), PU-617/M (6115-00-738-6335), PU-618/M (6115-00-738-6337), PU-619/M (6115-00-738-6339), PU-620/M (6115-00-738-6340), PU-625/G (6115-00-837-3915), PU-628/G (6115-00-087-0873), PU-629/G (6115-00-937-5555), PU-631/G (6115-00-059-5172), PU-656/G (6115-00-939-3296) and PU-650B/G (6115-00-258-1622)	TM 5-6115-365-15
Test Set TA-27B/TSM	TM 11-2057A
Manual Telephone Switchboard SB-86/P; Installation and Operation (NSN 5805-00-503-2660)	TM 11-2134
Operator and Organizational Maintenance Manual: Telephone Set TA-312/PT (NSN 5805-00-543-0012)	TM 11-5805-201-12
Direct Support, General Support, and Depot Maintenance Manual (Including Repair Parts and Special Tools Lists): Telephone Set TA-312/PT (NSN 5805-00-543-0012)	TM 11-5805-201-35
Operator's and Organizational Maintenance Manual: Multiplexers, TD-202/U (NSN 5805-00-884-2176), TD-203/U (5805-00-884-2177), TD-204/U (5805-00-900-8200), TD-352/U (5805-00-900-8199) and TD-353/U (5805-00-985-9153); Restorers, Pulse Form, TD-206/G (5805-00-868-8078) and TD-206B/G (5805-01-020-2251) and Converters, Telephone Signal, CV-1548/G (5805-00-069-8795) and CV-1548A/G (5805-00-069-8795)	TM 11-5805-367-12
Organizational Maintenance Repair Parts and Special Tools Lists for Multiplexer TD-204/U (NSN 5805-00-900-8200)	TM 11-5805-367-20P-2
Organizational Maintenance Repair Parts and Special Tools Lists for Converter, Telephone Signal CV-1548/G and CV-1548A/G (NSN 5805-00-069-8795)	TM 11-5805-367-20P-5

A-3. TECHNICAL MANUALS. (CONT)

Direct Support, General Support, and Depot Maintenance Manual: Multiplexer TD-204/U	TM 11-5805-367-35/2
Direct Support and General Support Maintenance Manual: Converters, Telephone Signal CV-1548/G and CV-1548A/G	TM 11-5805-367-34-5
Operator's and Organizational Maintenance Manual: Multiplexers, TD-660/G (NSN 5805-00-930-8079), TD-660A/G and TD-660B/G (5820-00-928-3382)	TM 11-5805-382-12
Direct Support, General Support and Depot Maintenance Manual: Multiplexers TD-660/G (NSN 5805-00-930-8079), TD-660A/G and TD-660B/G (5805-00-928-3382)	TM 11-5805-382-35
Operator's and Organizational Maintenance Manual: Multiplexer TD-754/G (NSN 5820-00-930-8078)	TM 11-5805-383-12
Direct Support, General Support and Depot Maintenance Manual: Multiplexer TD-754/G (NSN 5820-00-930-8078)	TM 11-5805-383-35
Direct Support and General Support Maintenance Manual Time Division Digital Multiplexer TD-1069/G (To be published)	TM 11-5805-638-34
Operator's and Organizational Maintenance Manual Buffer, Data TD-1065/G (NSN 5805-01-028-8364)	TM 11-5805-637-12
Operator's and Organizational Maintenance Manual for Multiplexer, Time Division, Digital TD-1069/G	TM 11-5805-638-12
General Maintenance TSEC/KG-27(U) Telephone Set TA-43( )/PT, Telephone Set TA-312( )/PT, and Telephone Set TA-5003/U	TM 11-5810-232-14-2
Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Electronic Key Generator TSEC/KG-27	TM 11-5810-232-12P
Direct Support and General Support Maintenance Manual Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Communications Security Equipment TSEC/KG-27	TM 11-5810-232-34P
Operator's and Organizational Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI, and LS-147D/FI (NSN 5830-00-752-5357)	TM 11-5830-221-12

A-3. TECHNICAL MANUALS. (CONT)

Organizational Direct Support and General Support Maintenance Repair Parts and Special Tools Lists for Intercommunication Station LS-147C/FI (NSN 5830-00-752-5357)	TM 11-5830-221-24P
Field and Depot Maintenance Manual: Intercommunication Stations LS-147A/FI, LS-147B/FI, LS-147C/FI, and LS-147D/FI	TM 11-5830-221-35
Operator's, Organizational, Direct Support and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Connectors Receptacle, Electrical U-187/G and U-187A/G (FSN 5935-682-0381)	TM 11-5935-205-14P
Operator's and Organizational Maintenance Manual: Test Set, Telephone AN/PTM-7 (NSN 6625-00-902-7574)	TM 11-6625-648-12
The Army Maintenance Management System (TAMMS)	TM 38-750
Packaging of Materiel: Preservation (Vol II)	TM 38-230-2
Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command)	TM 750-244-2
Administrative Storage of Equipment	TM 740-90-1
Operator's and Organizational Maintenance Manual for Multiplexer TD-976/G (NSN 7025-01-048-9678) and Pulse Form Restorer TD-982/G (7025-01-061-1245)	TM 11-7025-202-12

A-4. MISCELLANEOUS PUBLICATIONS.

Policy for Safeguarding and Controlling Comsec Information (U)	(C) AR 380-40
Operator Instructions, TSEC/KG-27(U)	(C) KAO-133( )/TSEC
Organizational Maintenance Manual, TSEC/KG-27(U)	(C) KAM-258( )/TSEC
Primary Battery Supply Data	SB 11-6
FSC Class 6135; Primary Battery Management Data	SB 11-30
Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army	SB 38-100

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I INTRODUCTION

B-1. GENERAL.

This appendix provides a summary of the maintenance operations for the Telephone Terminal Set AN/TCC-73(*). It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. MAINTENANCE FUNCTION.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable, like-type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, aline, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

B-2. MAINTENANCE FUNCTION. (CONT)

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

B-3. COLUMN ENTRIES, SECTION II.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for the purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number of complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The number of task-hours specified by the work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C - Operator/Crew
O - Organizational
F - Direct Support
H - General Support
D - Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which is keyed to the remarks in section IV.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (SECTION III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable ool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated to the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code (5-digit) in parentheses for manufacturers.

B-5. REMARKS (SECTION IV).

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

Section II MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
00	Telephone Terminal Set AN/TCC-73(V)1, AN/TCC-73(V)2, AN/TCC-73A(V)1 and AN/TCC-73A(V)2	Inspect	1.0						A
		Inspect		0.5					
		Test	0.5						A,B
		Test		0.5				1,8,10	B
		Test			1.0			3,8,10	C
		Test				2.0		3,5,10	
		Service	0.4						A
		Service		0.4				2	
		Adjust	0.5						D
		Adjust			0.3			1,4,5	
		Repair	0.5						E
		Repair		1.0				1,2	F
		Repair			3.0			3,4,5	F
		Repair				8.0		1 thru 7	
		Overhaul					400.0	1 thru 10	G
01	Shelter, Electrical Equipment S-419B/TCC-73	Repair	0.5						E
		Repair		0.5				1,2	F
		Repair			6.0			3,4,5	F,H,I
		Repair				8.0		1 thru 7	J
0101	Cable Assemblies	Replace		0.5					
		Repair			1.0			3,4,5	
0102	Bracket Installation, Modified SC-D-965251	Repair			1.0			3 thru 6	
010201	Patch Panel Assembly SC-D-965284	Repair			1.0			3,4	
010202	Cable Assemblies	Repair			0.5			3,4	
010203	Electrical Installation, Modified SC-D-965252	Repair			1.0			3 thru 6	
01020301	Cable Assemblies	Repair			0.5			3,4	

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
01020302	Raceway Installation, Modified SC-D-965253	Repair			2.0			3 thru 6	
0102030 201	Shelter, Modified SC-D-965254	Repair				4.0		1 thru 7	
0102030 202	Blower Installation SC-D-606591 AND SC-D-606592	Repair		0.2				1,2	O
		Repair			0.5			3 thru 6	
0102030 203	Signal Entrance Box Installation SC-D-606661 and SC-D-681022	Repair			0.5			3 thru 6	K
01020302 0301	Electrical Surge Arrester F-1483/G and F-1495/G	Test			0.4				L
		Replace			0.5				M
		Repair					*		N
0102030 204	Video Entrance Box Assembly SC-D-606634	Repair			0.5			3 thru 6	
0102030 205	Power Entrance Box Assembly SC-D-606641	Repair			0.5			3 thru 6	
0102030 206	Power Distribution Box Assembly SC-D-606644	Repair		0.5				1,2	P

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(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
0102030207	TD-976 Monitor Box Installation SC-D-606708	Repair			0.5			3 thru 6	
02	Converter, Telephone Signal CV-1548/G	Replace		0.5				2	R
03	Intercommunication Station LS-147F/FI	Replace		0.5				2	S
04	Electronic Key Generator TSEC/KG-27	Replace Repair		0.5 1.0				2 1,2	T U
05	Multiplexer TD-204/U	Replace		0.5				2	V
	or Multiplexer TD-754/G	Replace		0.5				2	W
06	Multiplexer TD-660A/G	Replace		0.5				2	X
07	Telephone Set TA-312/PT	Replace		0.5				2	Y
08	High Speed Serial Data Buffer TD-1065/G	Replace		0.5				2	Q,Z
09	Multiplexer TD-976/G	Replace		0.5				2	AA,AB
10	Digital Multiplexer TD-1069/G	Replace		0.5				2	Q,AC

Section III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR TELEPHONE TERMINAL AN/TCC-73(*)

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	Multimeter AN/USM-223	6625-00-999-7465	
2	O	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5178	
3	F	Multimeter TS-352B/U	6625-00-553-0142	
4	F	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0079	
5	F	Tool Kit, Automotive Mechanics	5180-00-754-0641	
6	H	Ohmmeter ZM-21(*)	6625-00-643-1080	
7	H	Tool Kit, Shelter Repair TK-144/G	5180-00-973-4369	
8	O	Tools and test equipment associated with components of this end item.		
9	D	Tools and test equipment required for depot to test, overhaul, or rebuild this equipment.		
10	O	Digital Data Generator SG-1139/G	6625-01-136-2046	

Section IV REMARKS

REFERENCE CODE	REMARKS
A	Preventive maintenance checks and services.
B	Equipment operation test and self-test of end item equipment.
C	Test will be part of repair as indicated in end item breakdown.
D	Initial equipment setup.
E	Replacement of running spares (equipment/shelter).
F	As indicated in end item breakdown.
G	Equipment and shelter facility.
H	Also to include emergency repair of holes and minor structural damage as per TB 750-240. Replacement of door handles, latch bolt assemblies, and gaskets.
I	Also includes repair as indicated in breakdown.
J	Also includes repair of doors, skids, and permanent repair of holes and structural damage as per TB 750-240. Repair of wiring and 26-pair connectors.
K	Repair of 26-pair connectors.
L	Continuity/diode resistance checks.
M	Return to Sacramento Army Depot, Sacramento, CA for repair.
N	Procedures contained in DMWR 11-5920-252.
O	Replacement of blower parts.
P	Replacement of circuit breakers, current transformers, and meters.
Q	P/O AN/TCC-73A(V)1 and AN/TCC-73A(V)2.
R	For maintenance allocation, refer to TM 11-5805-367-12.
S	For maintenance allocation, refer to TM 11-5830-221-12.
T	For maintenance allocation, refer to KAM-258( )/TSEC(FOUO) and TM 11-5810-232-12P.
U	Repair by replacement of individual components for Installation Kit TSEC/KG-27 and Loopback Kit TSEC/KG-27.

REFERENCE CODE	REMARKS
V	For maintenance allocation, refer to TM 11-5805-367-12.
W	For maintenance allocation, refer to TM 11-5805-383-12.
X	For maintenance allocation, refer to TM 11-5805-382-12.
Y	For maintenance allocation, refer to TM 11-5805-201-12.
Z	For maintenance allocation, refer to TM 11-5805-367-12.
AA	For maintenance allocation, refer to TM 11-7025-202-14-1.
AB	P/O AN/TCC-73(V)1 and AN/TCC-73A(V)2.
AC	For maintenance allocation, refer to TM 11-5805-638-12.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the Telephone Terminal Set AN/TCC-73(*) to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The components of End Item and Basic Issue Items lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the terminal set in operation and to perform emergency repairs. Although packed and shipped separately, Basic Issue Items must be with the terminal set during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement Basic Issue Items, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column 1, Illus. No (Illustration Number). This column indicates the number of the illustration in which the item is shown.

b. Column 2, National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

Section I INTRODUCTION (CONT)

C-3. EXPLANATION OF COLUMNS. (CONT)

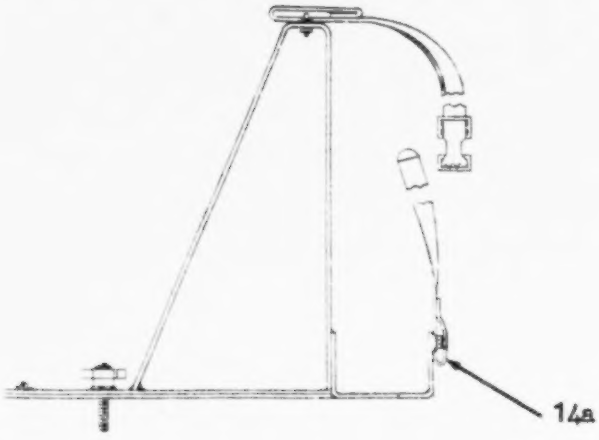
c. Column 3, Description. Indicates the Federal item name and if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs on different models of equipment, the model is shown under the "Usable On" heading in this column. The codes are identified as:

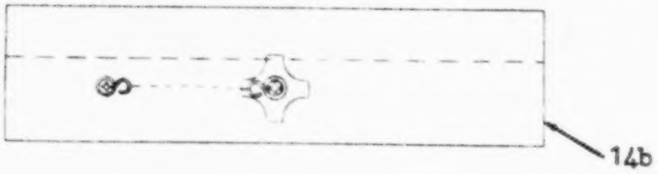
CODE	USED ON
FED	Model AN/TCC-73(V)1
CYS	Model AN/TCC-73(V)2
ESK	Model AN/TCC-73A(V)1
ESL	Model AN/TCC-73A(V)2
(Blank)	All Models

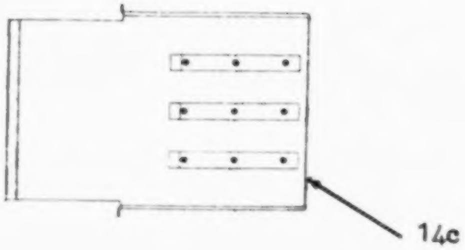
d. Column 4, U/M (Unit of Measure). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (ea, in., pr).

e. Column 5, Qty Req'd (Quantity Required). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II COMPONENTS OF END ITEM







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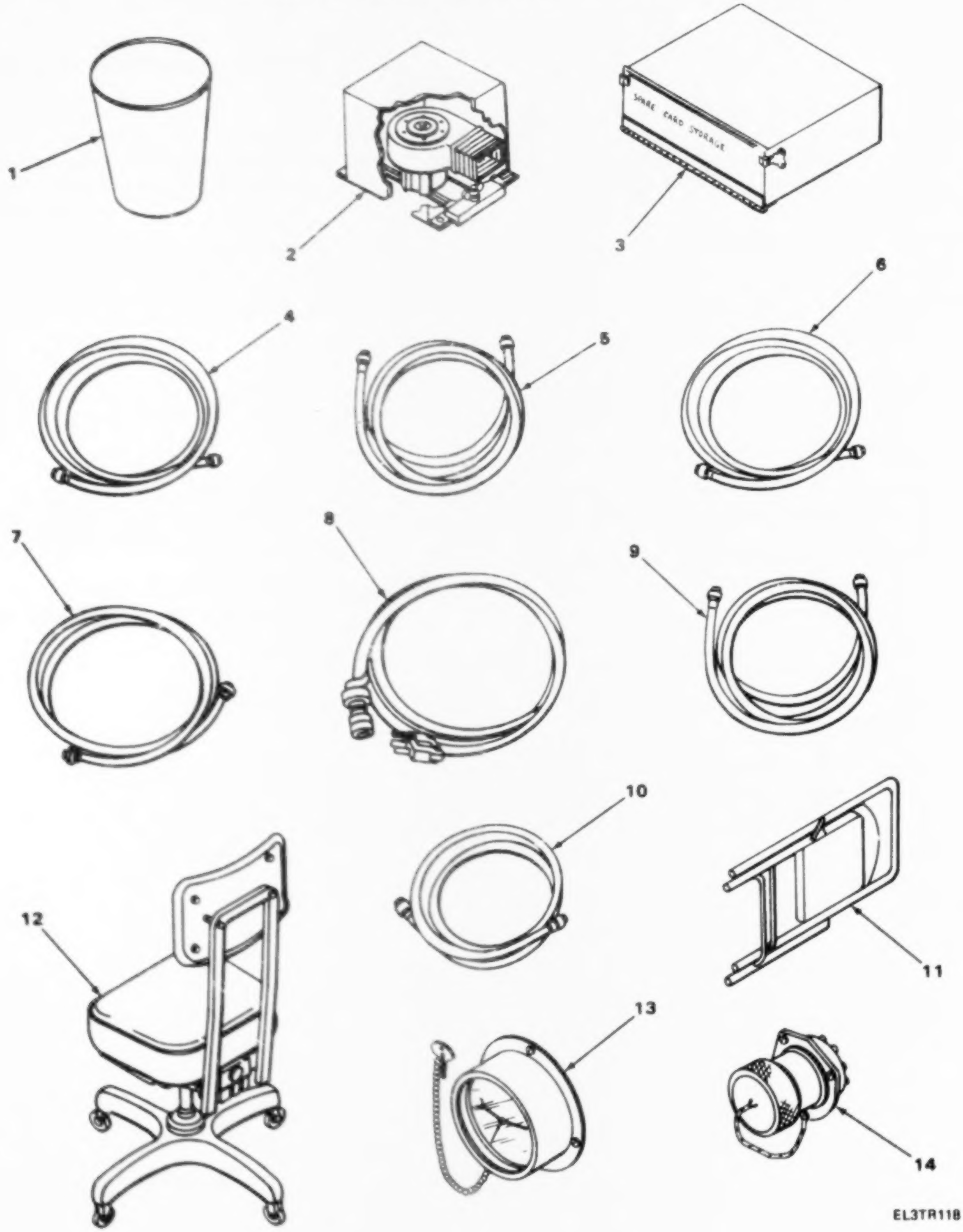
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Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
1	7520-00-159-4863	BASKET, WASTE PAPER (80063) SC-D-539554		EA	1
2	4140-01-061-2431	BLOWER ASSEMBLY (CW 12 O'CLOCK BLAST DIRECTION) (80058) SC-D-539899GRI		EA	1
2	4940-01-022-9244	BLOWER ASSEMBLY (CCW 6 O'CLOCK BLAST DIRECTION) (80058) SC-D-539899GRII		EA	1
3	5895-00-165-3332	BOX, SPARE CARDS STORAGE (80063) DL-SCB69397		EA	4
4	5995-00-495-0768	CABLE ASSEMBLY, PATCH THRU (1 1/2 FT) (80063) SC-D-627092(GR2)		EA	5
4	5995-00-182-2864	CABLE ASSEMBLY, PCM-TIM PATCH CABLE (2 1/2 FT) (80063) SC-C-606751		EA	40
5	5995-00-935-5112	CABLE ASSEMBLY, POWER ELECTRICAL (TD-754) (4 FT) CX-10630( )/G (80063) SC-DL-531036		EA	4
5	5995-00-935-2552	CABLE ASSEMBLY, POWER ELECTRICAL TD-754 (6 FT) CX-10630( )/G (80063) SC-DL-534036		EA	4
5	5995-00-933-5788	CABLE ASSEMBLY, POWER ELECTRICAL CX-11173( )/G (80063) SC-DL-531015		EA	4
5	5995-00-903-9858	CABLE ASSEMBLY, POWER ELECTRICAL (TD-754) (14 FT) CX-11173( )/G (80063) SC-DL-531015		EA	4
6	5995-00-935-2686	CABLE ASSEMBLY, POWER ENTRANCE (15 FT) CX-7705(A)/U (80058) MIL-C-554181		EA	1

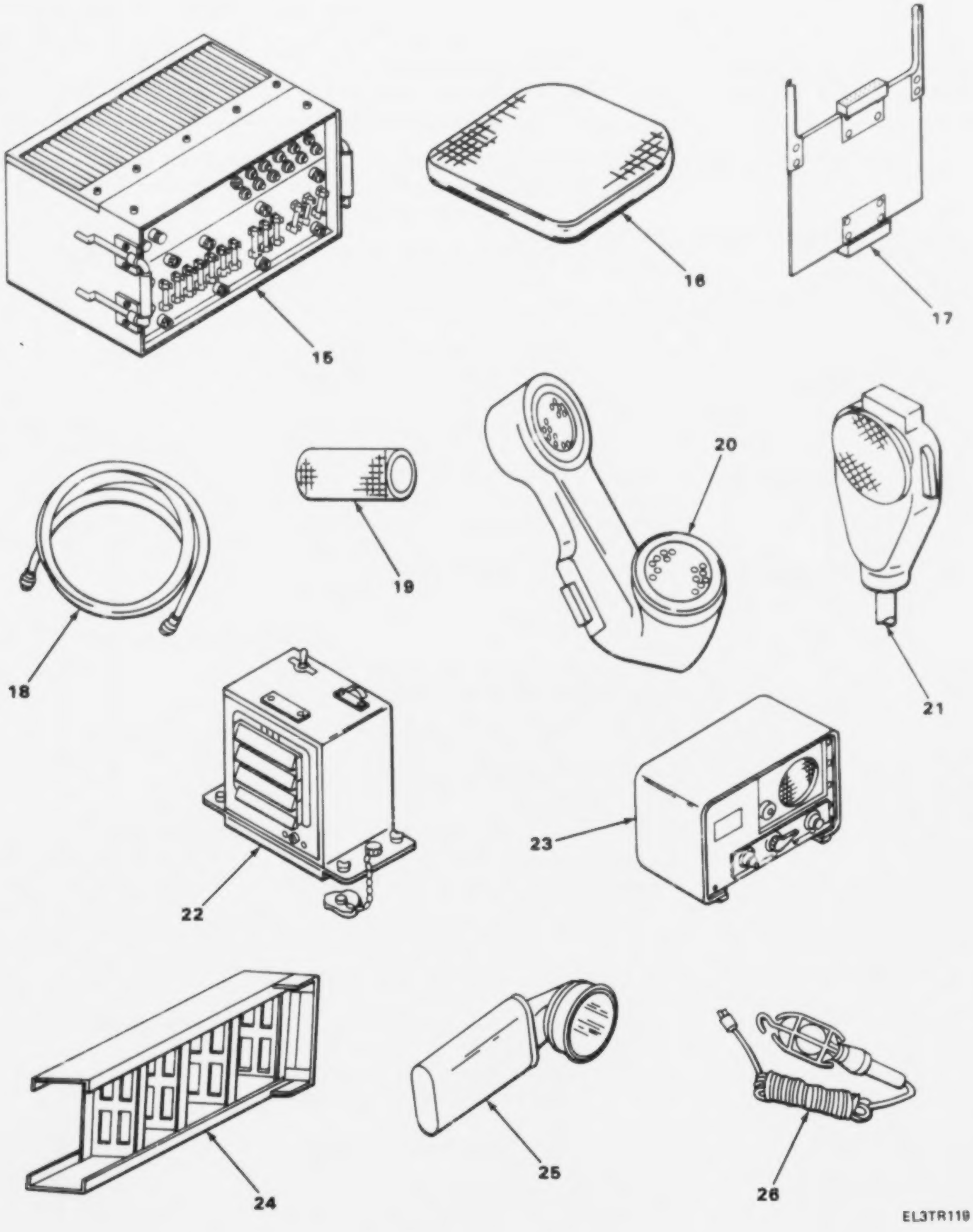
Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
6	5995-00-134-7159	CABLE ASSEMBLY, POWER ENTRANCE BOX (100 FT) CX-7453( )/U (80063) MIL-C-5548		EA	1
7	5995-00-933-5801	CABLE ASSEMBLY, RADIO FREQUENCY (TD-754) (3 FT) CG-1040( )/U (80063) SC-DL-531012		EA	4
7	5995-00-935-5289	CABLE ASSEMBLY, RADIO FREQUENCY (TD-754) (6 FT) CG-1040( )/U (80063) SC-DL-531012		EA	4
7	5995-00-916-2252	CABLE ASSEMBLY, RADIO FREQUENCY (TD-754) (10 FT) CG-2437( )/TCC (80063) SC-DL-531016		EA	4
7	5995-00-913-0510	CABLE ASSEMBLY, RADIO FREQUENCY (TD-754) (10 FT) CG-2438( )/TCC (80063) SC-DL-531017		EA	4
8	5995-00-177-4665	CABLE ASSEMBLY, SHIELDED POWER (TD-660) (5 FT) (80063) SC-D-681112(GR1)		EA	8
8	5995-00-177-4665	CABLE ASSEMBLY, SHIELDED POWER (TD-204/754) (5 FT) (80063) SC-D-681112(GR3)		EA	4
8	5995-00-177-4665	CABLE ASSEMBLY, SHIELDED POWER (CU-1548) (5 FT) (80063) SC-D-681112(GR4)		EA	8
9	5995-00-495-0769	CABLE ASSEMBLY, VIDEO CABLE PATCH (2 FT) (80063) SC-C-606750		EA	12
10	5995-00-913-0470	CABLE, SPECIAL PURPOSE, ELECTRICAL (TD-754) (5 FT) CX-7874( )/TCC (80063) SC-DL-531020		EA	4
10	5995-00-933-5963	CABLE, SPECIAL PURPOSE, ELECTRICAL (TD-754) (22 FT) CX-7875( )/TCC (80063) SC-DL-531021		EA	4

Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
11	7105-00-269-8463	CHAIR, FOLDING (80063) SC-D-539471		EA	1
12	7110-00-273-8791	CHAIR, ROTARY (80063) SC-D-539551		EA	1
13	6645-00-410-2395	CLOCK, WALL (3 INCH) (80063) SC-C-539475		EA	1
14	5935-00-449-7747	CONNECTOR, HERMAPHRODITE RECEPTACLE (UG-1837) (80058) DL-SC-B-598923		EA	6
14	5935-00-064-5732	CONNECTOR, RECEPTACLE U-238( )/G (80058) MIL-C-55449		EA	2
14	5935-00-045-9832	CONNECTOR, RECEPTACLE U-187(A)/G (80058) MIL-C-55074		EA	10
14a		BRACKET ASSEMBLY, HOLDOWN, BLOWER AND LADDER STORAGE (80063) SC-C-606626		EA	2
14b		HOLDDOWN ASSEMBLY, BLOWER HOUSING (80063) SC-C-606704		EA	2
14c		SHELF ASSEMBLY (80063) SC-D-681135		EA	1

Section II COMPONENTS OF END ITEM (CONT)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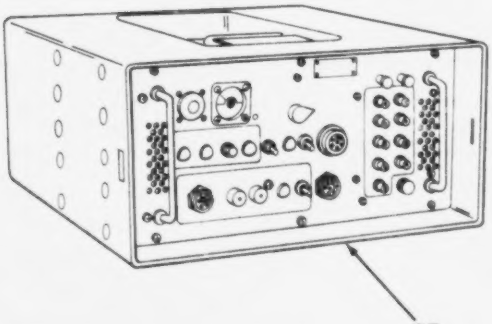
Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
15	5805-00-069-9795	CONVERTER, TELEPHONE SIGNAL (80058) CU-1548( )/G		EA	8
16	7210-00-753-3043	CUSHION, CHAIR (80063) SC-C-539526		EA	1
17	5805-00-952-9834	EXTENDER PANEL (80063) SC-DL-528640		EA	4
18		EXTENDER CABLE (2 FT) for 12A1 POWER SUPPLY NPN (80063)		EA	2
19	5120-00-946-5114	GRIP, CABLE (SIGNAL CABLE) (20 IN.) (80063) SC-B-539593		EA	15
19	5120-00-946-5148	GRIP, CABLE (POWER CABLE) (15 IN.) (80063) SC-B-539592		EA	2
20	5965-00-892-3850	HANDSET H-156( )/U (80058) MIL-H-11996		EA	2
21	5965-00-669-6871	HANDSET - MICROPHONE H-91( )/U (80058) SC-DL-134001		EA	2
22	4520-00-177-6198	HEATER (17032) P15C10		EA	2
23	5830-00-752-5357	INTERCOMMUNICATION STATION (80058) LS-147( )FI		EA	1
24	2540-00-892-6243	LADDER, BOARDING MX-33910/G (80063) SC-DL-108736		EA	1
25	6230-00-729-9614	LANTERN (80063) SC-C-539491		EA	1
26	6230-00-239-3518	LIGHT, EXTENSION (25 FT) (80063) SC-C-539496		EA	1

Section II COMPONENTS OF END ITEM (CONT)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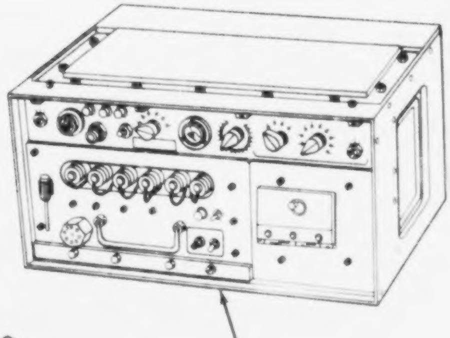
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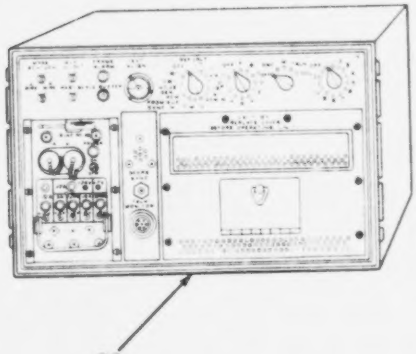
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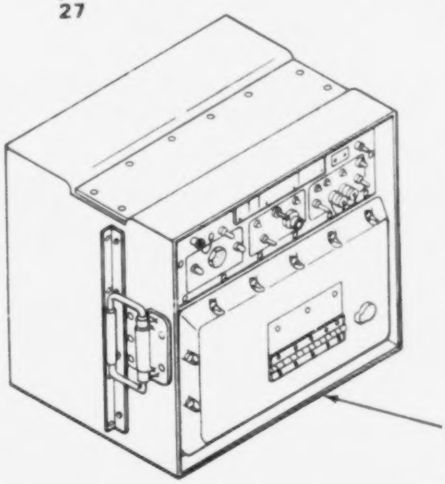
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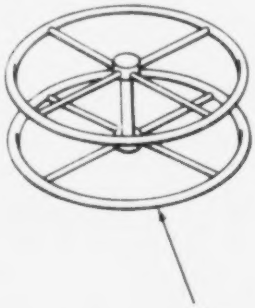
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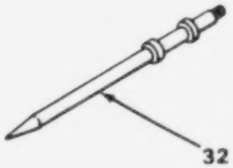
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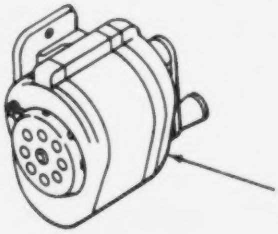
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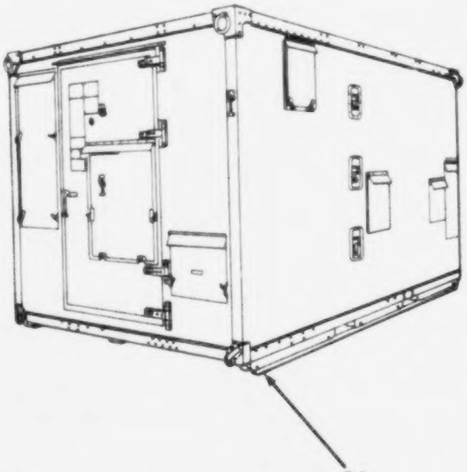
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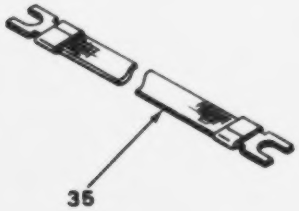
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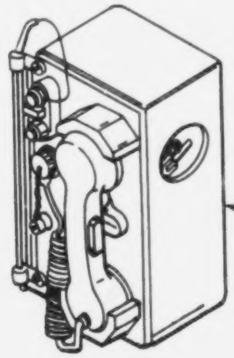
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Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
27	5805-00-900-8200	MULTIPLEXER (80058) TD-204/U		EA	*
28	5820-00-930-8078	MULTIPLEXER (80058) TD-754/G		EA	*
29	5805-00-930-8079	MULTIPLEXER (80058) TD-660/G		EA	8
		OR			
29	5820-00-928-3382	MULTIPLEXER (80058) TD-660A/G		EA	8
		OR			
29	5820-00-928-3382	MULTIPLEXER (80058) TD-660B/G		EA	8
30	7025-01-048-9678	MULTIPLEXER (80058) TD-976/G		EA	**
31	8130-00-656-1090	REEL, CABLE RC-435( )/U (80058) SC-DL-69296		EA	1
32	5975-00-224-5260	ROD, GROUND MX-1480/G (80058) SC-D-14158		EA	2
33	7520-00-162-6178	SHARPENER, PENCIL SCC539503		EA	1
34	5410-01-098-2393	SHELTER, ELECTRICAL EQUIPMENT S-419B/TCC-73(*) (29147) MIL-S-55307 MIL-S-55307		EA	1
35	4940-00-752-2525	STRAP, GROUND (80063) SC-B-539492		EA	2
36	5805-00-855-6004	TELEPHONE SET (80058) TA-312( )/PT		EA	1

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* – Four TD-204/Us or TD-754/Gs are used in models AN/TCC-73(V)1 and AN/TCC-73(V)2.
Eight TD-204/Us or TD-754/Gs are used in models AN/TCC-73A(V)1 and AN/TCC-73A(V)2.

** – Two TD-976/Gs are used in models AN/TCC-73(V)1 and AN/TCC-73A(V)1.

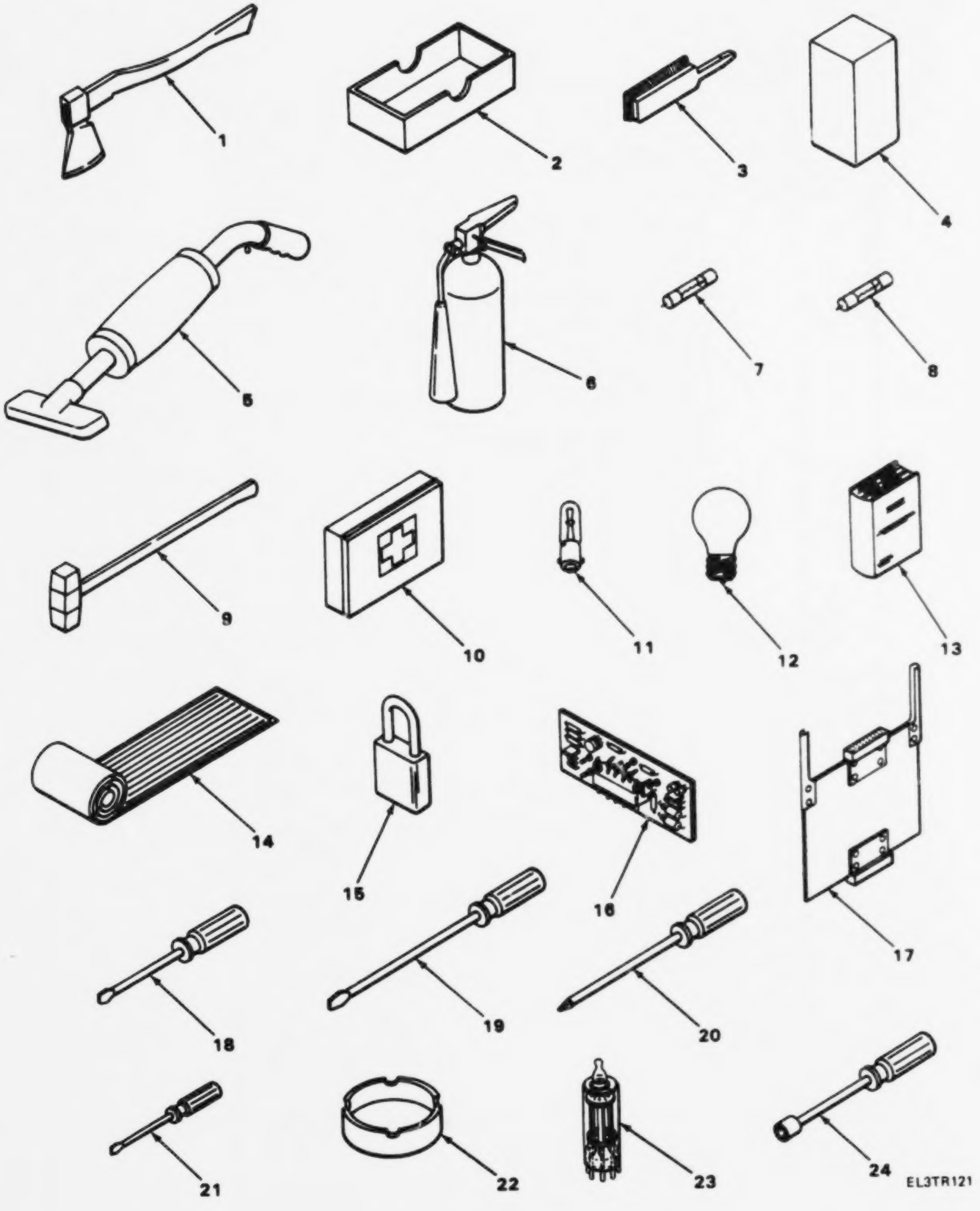
Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
		BOX, CARD STORAGE TD-1065/G and TD-1069/G DL-SC-B-681159		EA	1
	5999-01-110-1032	BOX, CARD STORAGE TD-976/G SM-D-941970		EA	1
		BOX SWITCH, ASSEMBLY SC-D-959379		EA	1
	5995-00-495-0769	CABLE, VIDEO, ZFT SC-C-606750		EA	20
	5995-00-182-2864	CABLE, PCM-TIM, 2 FT SC-C-606751		EA	30
	5995-00-192-9613	CABLE, REPEATER, 1 FT 6 IN SC-D-627092		EA	3
		CABLE, AUDIO, 10 PAIR SC-D-784107		EA	12
		CABLE, RF, COAXIAL SC-D-784101		EA	56
		CABLE, RF, TWINAX SC-D-784108		EA	16
		CABLE, RF, TWINAX SC-D-784113		EA	16
		CABLE, SHIELDED, POWER SC-D-965302		EA	8
		CABLE, RF, COAXIAL SC-D-965292		EA	28
		CABLE, RF, MHV SC-D-965294		EA	4
		CABLE, RF, COAXIAL SC-D-965295		EA	4
		CABLE, RF, COAXIAL SC-D-965296		EA	8

Section II COMPONENTS OF END ITEM (CONT)

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
		CABLE, AUDIO, 4 PAIR SC-D-965297		EA	4
		CABLE, RF, TWINAX SC-D-784104		EA	4
		CABLE, AUDIO, 10 PAIR SC-D-784105		EA	2
		CABLE ASSEMBLY SC-D-965322		EA	2
		CONNECTOR, VIDEO UG-1837/U		EA	14

Section III BASIC ISSUE ITEMS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Section III BASIC ISSUE ITEMS (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
1	5110-00-115-5049	AXE, SINGLE BIT (80063) SC-C-539451		EA	1
2	7520-00-145-0562	BOX, PENCIL SC-D-539455		EA	1
3	7920-00-178-8315	BRUSH, DUSTING BENCH (80063) SC-C-539469		EA	1
4	5805-00-752-6166	CASE, TELEPHONE SC-DL-208120		EA	1
5	7910-00-900-1678	CLEANER, VACUUM (29335) 2800		EA	1
6	4210-00-270-4512	EXTINGUISHER, FIRE CO^2 (5 LB) SC-B-539482		EA	1
7	5920-00-199-9498	FUSE, CARTRIDGE TYPE, (CV-1548) (81349) F028250V1/2A		EA	10
7	5920-00-050-4953	FUSE, CARTRIDGE TYPE, (TD-660) (81349) F02A250V11/2A		EA	10
7	5920-00-284-9220	FUSE, CARTRIDGE TYPE, (TD-660) (81349) F02B250V1A		EA	20
7	4940-00-243-2641	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F0A250V1/4A		EA	8
7	5920-00-280-8344	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F02A250V1/2A		EA	4
7	5920-00-296-0446	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F02A250V3/4A		EA	1
7	5920-00-280-8342	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F02A250V1A		EA	12
7	5920-00-280-4960	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F02A250V2A		EA	4
7	5920-00-010-6652	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F02A250V3A		EA	6
7	5920-00-284-6787	FUSE, CARTRIDGE TYPE, (TD-204) (81349) F02A250V5A		EA	1

Section III BASIC ISSUE ITEMS (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
8	5920-00-905-1831	FUSE, INSTRUMENT TYPE, (TD-660) (81349) FM02125V3/4A		EA	10
8	5920-00-936-3946	FUSE, INSTRUMENT TYPE, (TD-660) (81349) FM02125V5/10A		EA	10
8	5920-00-926-7445	FUSE, INSTRUMENT TYPE, (TD-660) (81349) FM02125V3A		EA	10
8	5895-00-926-7899	FUSE, INSTRUMENT TYPE, (TD-660) (81349) FM02125V11/2A		EA	10
9	5120-00-900-6096	HAMMER, SLEDGE (8 LB) (80063) SC-C-539505		EA	1
10	6545-00-922-1200	KIT, FIRST AID (80063) SC-D-539483		EA	1
11	6240-00-892-4420	LAMP, GLOW C7A (TD-660) (81349) M15098/11-001		EA	3
11	6240-00-682-3411	LAMP, GLOW B1A (81349) M15098/10-001		EA	10
11	6240-00-270-4284	LAMP, GLOW R2A (81349) M15098/3-002		EA	2
11	6240-00-223-9100	LAMP, GLOW, BAYONET B7A (81349) M15098/5-002		EA	2
11	6240-00-951-0608	LAMP, INCANDESCENT (TD-754) (81349) MS-25237-327		EA	5
11	6240-00-155-8002	LAMP, TUNGSTEN, GE P/N 35 (81349) SM-B-628673		EA	3
12	6240-00-155-8653	LAMP, INCANDESCENT 25W (81349) GE#25W/RS		EA	11
12	6240-00-143-3070	LAMP, INCANDESCENT 50W (81349) GE#50/RS		EA	3
13		MANUALS, TECHNICAL		SET	1
14	7105-00-269-8465	MAT, FLOOR SC-C-539500-4		EA	1

Section III BASIC ISSUE ITEMS (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
15	5340-00-158-3805	PADLOCK SC-C-595537		EA	1
16	5805-00-459-8584	PANEL 11A28, RECEIVE TIMING (TD-660) (80058) SC-B-525263		EA	4
16	5820-00-459-8585	PANEL 11A29, ALARM CIRCUIT (TD-660) (80058) SC-DL-525268		EA	4
16	5805-00-459-8577	PANEL 11A2, TRANSMIT TIMING (TD-660) (80058) SC-DL-524601		EA	4
16	5820-00-459-8577	PANEL 11A23, TRANSMIT TIMING (TD-660) (80058) SC-DL-525238		EA	4
16	5820-00-549-8578	PANEL 11A24, MODEM TIMING (TD-660) (80058) SC-DL-525243		EA	4
16	5805-00-459-8581	PANEL 11A26, TRIPLE MODEM (TD-660) (80058) SC-DL-525253		EA	4
16	5805-00-459-8582	PANEL 11A27, DECODER RECEIVER (TD-660) (80058) SC-DL-525258		EA	4
16	5805-00-459-8578	PANEL 11A3, MODEM TIMING (TD-660) (80058) SC-DL-524602		EA	4
16	5805-00- 854-6927	PANEL 11A4, PAM RESHAPER (TD-660) (80058) SC-DL-524603		EA	4
16	5805-00-459-8579	PANEL 11A5, PAM RESHAPER (TD-660) (80058) SC-DL-525248		EA	4
16	5805-00-459-8581	PANEL 11A5, TRIPLE MODEM (TD-660) (80058) SC-DL-524604		EA	4
16	5805-00-459-8582	PANEL 11A6, DECODER RECEIVER (TD-660) (80058) SC-DL-524605		EA	4
16	5805-00-459-8584	PANEL 11A7, RECEIVER TIMING (TD-660) (80058) SC-DL-524606		EA	4
16	5805-00-459-8585	PANEL 11A8, ALARM CIRCUIT (TD-660) (80058) SC-DL-524607		EA	4

Section III BASIC ISSUE ITEMS (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
16	5805-00-444-2258	PANEL 12A2, ORDER WIRE (TD-754) (80058) SC-DL-525404		EA	2
16	5820-00-137-2330	PANEL 12A3, O.W. AND ALARMS (TD-754) (80058) SC-DL-525405		EA	2
16	5820-00-137-2331	PANEL 12A4, TRANSMIT CIRCUIT (TD-754) (80058) SC-DL-525406		EA	2
16	5820-00-137-2329	PANEL 12A5, CABLE INPUT CIRCUIT (TD-754) (80058) SC-DL-525407		EA	2
16	5820-00-137-2333	PANEL 12A6, RECEIVE CIRCUIT (TD-754) (80058) SC-DL-525408		EA	2
16	5805-00-930-4838	PANEL 18A2, 20 Hz AND 1600 Hz GENERATORS (CV-1548) (80058) SC-DL-528638		EA	4
16	5805-00-944-8142	PANEL 6A2, ORDER WIRE I (TD-204) (80058) SC-DL-527627		EA	2
16	5805-00-944-8932	PANEL 6A3, ORDER WIRE II (TD-204) (80058) SC-DL-527628		EA	2
16	5805-00-926-0264	PANEL 6A4, CABLE INPUT (TD-204) (80058) SC-DL-527624		EA	2
16	5805-00-944-8159	PANEL 6A5, TRANSMIT I (TD-204) (80058) SC-DL-527623		EA	2
16	5805-00-944-8153	PANEL 6A6, TRANSMIT II (TD-204) (80058) SC-DL-527625		EA	2
16	5805-00-944-8401	PANEL 6A7, RECEIVE STATION (TD-204) (80058) SC-DL-527626		EA	2
16	5805-00-855-6004	PANEL, DUMMY TEST (TD-660) (80058) SC-DL-524666		EA	4
17	5805-00-952-9834	PANEL, EXTENDER (TD-754) (80063) SC-DL-528640		EA	2
18	5120-00-451-8250	SCREWDRIVER (FLAT BLADE) (80063) SC-C-539502-4		EA	1

Section III BASIC ISSUE ITEMS (CONT)

(1) ILLUS NO	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
19	5120-00-555-2063	SCREWDRIVER (FLAT BLADE) (1/4 × 8 IN.) (80063) GGG-S-121TYPE1C/1		EA	1
20	5120-00-234-8913	SCREWDRIVER (PHILLIPS TYPE) (4 IN. LONG) (80063) SC-C-539894-3		EA	1
21	5120-00-274-4940	TOOL, ADJUSTMENT (80063) SC-C-730031		EA	4
22	9920-00-680-1740	TRAY, ASH (81349) AA-A-710TYPE III		EA	1
23	5960-00-179-3710	TUBE, ELECTRON, TYPE GAV6WC (81349) MIL-E-1/952		EA	2
23	5960-00-669-6861	TUBE, ELECTRON, TYPE 6005W (6A65) (81349) MIL-E-1-13		EA	2
23	5960-00-272-9182	TUBE, ELECTRON, TYPE 6 × 4WA (81349)		EA	2
24	5120-00-224-2596	WRENCH, SOCKET, SPIN-TYPE 5/16 IN. (80063)		EA	1
	7025-01-085-5645	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941905	FED ESK	EA	1
	7025-01-085-5646	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941910	FED ESK	EA	1
	7025-01-085-7350	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941900	FED ESK	EA	1
	7025-01-085-5658	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941915	FED ESK	EA	1
	7025-01-085-5647	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941920	FED ESK	EA	1
	7025-01-089-7864	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941925	FED ESK	EA	1

Section III BASIC ISSUE ITEMS (CONT)

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
	7025-01-089-7863	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941925	FED ESK	EA	1
	7025-01-085-5649	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941940	FED ESK	EA	1
	7025-01-085-5650	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941945	FED ESK	EA	1
	7025-01-085-5651	CIRCUIT CARD ASSY (TD-976/G) (80063) SM-D-941950	FED ESK	EA	1
	5805-01-037-6929	CIRCUIT CARD ASSY (TD-1065/G) (80063)	ESK ESL	EA	1
	5805-01-037-6928	CIRCUIT CARD ASSY (TD-1065/G) (80063)	ESK ESL	EA	1
	5805-01-037-6927	CIRCUIT CARD ASSY (TD-1065/G) (80063)	ESK ESL	EA	1
	5805-01-034-3901	CIRCUIT CARD ASSY (TD-1065/G) (80063)	ESK ESL	EA	1
	5805-01-119-2783	CIRCUIT CARD ASSY (TD-1069/G) (56996) B4007515	ESK ESL	EA	1
	5805-01-119-2785	CIRCUIT CARD ASSY (TD-1069/G) (56996) B4007500	ESK ESL	EA	1
	5805-01-119-2786	CIRCUIT CARD ASSY (TD-1069/G) (56996) B4007503	ESK ESL	EA	1
	5805-01-119-2787	CIRCUIT CARD ASSY (TD-1069/G) (56996) B4007506	ESK ESL	EA	1
	5805-01-119-2788	CIRCUIT CARD ASSY (TD-1069/G) (56996) B4007509	ESK ESL	EA	1
	5805-01-119-2784	CIRCUIT CARD ASSY (TD-1069/G) (56996) B4007512	ESK ESL	EA	1
	5805-01-119-2783	PRINTED WIRING BOARD (TD-1069/G) (56995) B4007517	ESK ESL	EA	1

APPENDIX D

ADDITIONAL AUTHORIZATION LIST

Section I INTRODUCTION

D-1. SCOPE.

This appendix lists additional items you are authorized for the support of the terminal set.

D-2. GENERAL.

This list identifies items that do not have to accompany the terminal set and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING.

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name, under the type document (i.e. CTA, MTOE, TDA, or JTA) which authorizes the items to you. If item required differs for different models of this equipment, the model is shown under the "Usable On" heading in the description column. These codes are identified as follows:

Code	Used On
FED	Model AN/TCC-73(V)1
CYS	Model AN/TCC-73(V)2
ESK	Model AN/TCC-73A(V)1
ESL	Model AN/TCC-73A(V)2
(Blank)	All Models

Section II ADDITIONAL AUTHORIZED LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION FSCM & PART NUMBER	USABLE ON CODE	(3) U/M	(4) QTY AUTH
	MTOE AUTHORIZED ITEMS			
5805-01-028-8364	BUFFER, DATA TD-1065/G	ESK ESL	EA	8
5995-00-195-0958	CABLE ASSEMBLY, RF, TD-660 to KG-27, (13 FT) (GR86) (80063) SC-D-595511		EA	4
5995-00-195-0958	CABLE ASSEMBLY, RF, TD-660 to KG-27 (13 FT) (GR87) (80063) SC-D-595511		EA	4
5995-00-195-0958	CABLE ASSEMBLY, RF, TD-660 to KG-27 (13 FT) (GR88) (80063) SC-D-595511		EA	4
5995-00-181-9546	CABLE ASSEMBLY, RF, TD-660 to KG-27 (13 FT) (GR9) (80063) SC-D-693658		EA	4
5995-00-181-9546	CABLE ASSEMBLY, RF, TD-660 to KG-27 (13 FT) (GR10) (80063) SC-D-693658		EA	4
5995-00-177-4665	CABLE ASSEMBLY, SHIELDED POWER, (KG-27), (5 FT), (GR2) (80063) SC-D-681112		EA	4
5810-00-054-9110	COMMUNICATIONS SECURITY EQUIPMENT, (80063) TSEC/KG-27		EA	8
5805-01-028-8425	MULTIPLEXER, TIME DIVISION, DIGITAL TD-1069/G	ESK ESL	EA	2
6115-00-937-5555	GENERATOR SET, GASOLINE, TRAILER MOUNTED (PU-629/G) (81349) MILP52621		EA	1
6625-01-136-2046	DIGITAL DATA GENERATOR SG-1139/G		EA	1

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I INTRODUCTION

E-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain terminal set. These items are authorized to you by CTA 50-970, Expendables Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. EXPLANATION OF COLUMNS.

a. Column 1, Item Number. This number is assigned to the entry in the listing, and is referenced in the narrative instructions to identify the material (e.g., Use Cleaning Compound, Item 5, App. E).

b. Column 2, Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Organizational Maintenance/Aviation Unit Maintenance
F - Direct Support Maintenance/Aviation Intermediate Maintenance
H - General Support Maintenance

c. Column 3, National Stock Number. This is the National stock number assigned to the item. Use it to request or requisition the item.

d. Column 4, Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by a part number.

e. Column 5, U/M (Unit of Measure). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) NATIONAL STOCK LEVEL	(3) NUMBER	(4) DESCRIPTION, FSCM	(5) U/M
1	C	8020-00-721-9657	Brush, Paint, 2 in. (MB-451) (81848)	EA
2	C	8305-00-222-2433	Cloth, Cheesecloth (CCCC660) (81348)	YARD
3	C	9150-00-985-7247	Grease, Graywhite Aircraft (MIL-6-23827) (81349)	CAN
4	C	9150-00-068-9474	Oil, Lubricating, Engine (08-10) (81349)	QT
5	C	9150-00-185-0629	Oil, Lubricating (PL-SPECIAL) (FEDVVL800) (81348)	QT
6	C	8010-00-111-7937	Paint, Forest Green ALKYD Enamel (TB-43-0118) (MILE-52798A) (81349)	GAL
7	C	7510-00-281-5234	Pencil, No. 2 (SS-P-116) (81348)	DOZ
8	C	5350-00-260-3485	Sandpaper, Fine (PP-105) (81348)	PKG
9	C	8010-00-160-5191	Thinner, Paint T-354-L (81348)	PINT
10	C	6850-00-105-3084	Trichlorotrifluoroethane (Cleaning Compound, Freonpca)	PINT
11	C	5970-00-188-5477	Tape, Insulation (MIL17798) (81349)	ROLL
12	C	4020-00-241-8886	Twine, Fibrous Linen (T-T-891) (81348)	BALL

GLOSSARY

The following special terms or words are used in this manual.

Word or Term	Definition
Amplitude	The level of an audio or other signal in voltage or current terms.
Attenuation	To lessen the amount, force, or value of.
Binary system	Number system consisting of only 1 and 0 (on-off).
Data	Factual information.
Decode	To convert a digital signal to an analog signal.
Digital	Relating to data transmitted in the form of binary numbers.
Digitize	To convert into digital notation.
Encode	To convert an analog signal to a digital signal.
Facsimile	Similar or identical to.
Multiplex	Transmitting several messages at the same time on one channel.
Polarity	The relationships between the positive and negative changes in an electrical circuit.

INDEX

Subject Page

A

Abbreviations,
 list of 1-3
AC switch,
 removal and installation of 4-24
AC voltmeter,
 removal and installation of 4-14
 testing of 4-39
Administrative storage 1-2
Air conditioner hardware kit,
 installation and removal of 2-18
Ammeter,
 removal and installation of 4-12

B

Block diagram presentation 1-29

C

Cable connector, 26-pair,
 removal, repair, and installation of 6-7
Checking unpacked materiel 2-10
Circuit alinement,
 order wire for TD-204/U 2-69
 order wire for TD-754/G 2-70
 TD-660(*)/G channel gain adjustment 2-71
Circuit breaker
 removal and installation of 4-16
Circuit breaker, MAIN
 removal and installation of 4-18
Common tools and equipment 6-1
Connections, signal
 field wire 2-19
 local communications 2-21
 telephone circuit line 2-19
 video entrance box 2-21
 26-pair cable connections 2-20
Convenience receptacle,
 removal and installation of 4-21

D

Data Buffer TD-1069/G,
 installation of 2-24
 operating procedure of 2-77
 self-test procedure of 2-33

INDEX (CONT)

Subject Page

D (CONT)

Description and use of operator's controls and indicators . . . 2-1
Destruction of Army electronics equipment . . . 1-2
Differences between models . . . 1-12
Direct support maintenance procedures
  inspection and replacement of exhaust blower assembly impeller . . . 5-8
  repair and replacement of power cable connector . . . 5-14
  replacement of
    electrical surge arresters F-1483/G and F-1495/G . . . 5-16
    exhaust blower assembly motor . . . 5-10
    exhaust blower assembly power cord . . . 5-4
    power receptacle . . . 5-12
Duplex receptacles,
  testing, removal, and installation of . . . 4-28

E

Equipment characteristics, capabilities, and features . . . 1-4
Equipment data . . . 1-13
Equipment description . . . 1-4
Exhaust blower,
  controls . . . 2-5
  installation of . . . 2-16
  replacement of . . . 5-10
  replacement of impeller . . . 5-8
  replacement of motor . . . 5-10
  replacement of power cord . . . 5-4
  storage of . . . 4-40

F

Facility block diagram presentation . . . 1-16
Fluorescent lamps,
  removal and installation of . . . 3-38
Fluorescent lamp starters,
  removal and installation of . . . 3-39
Functional equipment description . . . 1-29

G

General support maintenance procedures
  removal, repair, and installation of 26-pair cable connector . . . 6-7
  removal, repair, and installation of 26-pair receptacle . . . 6-4
  testing of 26-pair signal cable . . . 6-3
Grounding connection . . . 2-12
Grounding strap
  disconnecting and storing . . . 4-43

INDEX (CONT)

Subject ... Page

H

Hand receipt (-HR) manuals ... 1-2
Heaters,
  operation of ... 2-73
How to use this manual ... iii

I

Incandescent cold start lamps,
  removal and installation of ... 3-40
Indicator lamp,
  replacement of ... 3-36
Initial setup of
  Data Buffer TD-1065/G ... 2-61
  Key Generator TSEC/KG-27 ... 2-61
  Multiplexer TD-204/U ... 2-56
  Multiplexer TD-660(*)/G ... 2-60
  Multiplexer TD-754/G ... 2-58
  Multiplexer TD-976/G ... 2-65
  Multiplexer TD-1069/G ... 2-67
  Signal Converter CV-1548(*)/G ... 2-63
Installation of air conditioner hardware kit ... 2-18
Installing and connecting security equipment TSEC/KG-27 ... 2-22
Installing
  Data Buffer TD-1065/G ... 2-24
  Multiplexer TD-1069/G ... 2-27
Interlock switch,
  removal and installation of ... 4-32
Introduction ... 1-1

K

Key Generator TSEC/KG-27,
  checkout procedures of ... 2-22
  installation of ... 2-22

L

Ladder
  installation of ... 2-12
  storage of ... 4-42
List of abbreviations ... 1-3
Location and description of major components ... 1-4
Loopback checks of
  cable link ... 3-34
  Multiplexer TD-660(*)/G ... 3-33
  Multiplexer TD-754/G ... 3-33

INDEX (CONT)

Subject Page

M

Maintenance forms, records, and reports 1-2
Maintenance procedures
 direct support 5-1
  inspection and replacement of exhaust blower assembly impeller 5-8
  repair and replacement of power cable connector 5-14
  replacement of
   electrical surge arresters F-1483/G and F-1495/G 5-16
   exhaust blower assembly motor 5-10
   exhaust blower assembly power cord 5-4
   power receptacle 5-12
  testing of exhaust blower assembly power cord 5-5
 general support 6-1
  removal, repair, and installation of,
   26-pair cable connector 6-7
   26-pair receptacle 6-4
  testing of 26-pair signal cable 6-3
 operator 3-39
  replacement of
   fluorescent lamps 3-38
   fluorescent lamp starters 3-39
   incandescent cold start lamps 3-40
   power distribution panel indicator glow lamps 3-37
   power indicator lamp 3-36
 organizational 4-1
  replacement of
   ac switches 4-24
   heaters 4-8
   duplex receptacles 4-28
   exhaust blower assembly 4-30
   interlock switch 4-32
   power distribution panel ac voltmeter 4-14
   power distribution panel ammeter 4-12
   power distribution panel current transformer 4-10
   power distribution panel indicator lampholders 4-20
   power entrance box convenience receptacle 4-21
   power indicator neon lamp socket 4-34
   single receptacles 4-26
  testing and replacement of
   power distribution panel circuit breaker 4-16
   power distribution panel MAIN circuit breaker 4-18
  testing of
   ac voltmeter 4-38
   communications equipment 4-38
   power cable 4-36
   signal cable 4-37
Multiplexer TD-204/U,
 initial setup of 2-56
 loopback check of 3-33

INDEX (CONT)

Subject Page

M (CONT)

Multiplexer TD-204/U, (CONT)
 operating procedure of 2-76
 order wire procedure of 2-69
 self-test procedure of 2-34
Multiplexer TD-660(*)/G,
 channel gain adjustment of 2-71
 initial setup of 2-60
 loopback check of 3-33
 operating procedures 2-75
 self-test procedures 2-32
Multiplexer TD-754/G,
 initial setup of 2-58
 loopback check of 3-33
 operating procedure 2-76
 order wire procedure 2-70
 self-test procedure 2-34
Multiplexer TD-976/G
 operating procedure 2-78
 self-test procedure 2-46
Multiplexer TD-1069/G
 operating procedure 2-78
 self-test procedure 2-53

N

Nomenclature cross-reference list 1-3

O

Operating instructions 2-1
Operating procedures for
 air conditioner 2-74
 data buffer 2-77
 exhaust blowers 2-74
 heaters 2-73
 Intercommunication Station LS-147C/FI 2-80
 Key Generator TSEC/KG-27 2-79
 monitoring channels 2-82
 Multiplexer TD-204/U 2-76
 Multiplexer TD-660(*)/G 2-75
 Multiplexer TD-754/G 2-76
 Multiplexer TD-976/G 2-78
 Multiplexer TD-1069/G 2-78
 order wire communications 2-81
 power turn-on for AN/TCC-73(*) facility 2-72
 Signal Converter CV-1548(*)/G 2-75
 switch box 2-79
 Telephone Set TA-312/PT 2-80

INDEX (CONT)

Subject — Page

O (CONT)

Operation under unusual conditions 2-84
Operator maintenance procedures 3-35
  replacement of
    fluorescent lamps 3-38
    fluorescent lamp starters 3-39
    incandescent cold start lamps 3-40
    power distribution panel indicator glow lamps 3-37
    power indicator lamp 3-36
Operator preventive maintenance checks and services 2-7
Order wire for TD-204/U 2-69
Order wire for TD-754/G 2-70
Organizational maintenance procedures
  replacement of
    ac switches 4-24
    heaters 4-8
    duplex receptacles 4-28
    exhaust blower assembly 4-30
    interlock switch 4-32
    power distribution panel ac voltmeter 4-14
    power distribution panel ammeter 4-12
    power distribution panel current transformer 4-10
    power distribution panel indicator lampholders 4-20
    power entrance box convenience receptacle 4-21
    power indicator neon lamp socket 4-34
    single receptacles 4-26
  testing ac voltmeter 4-38
  testing and replacement of
    power distribution panel circuit breaker 4-16
    power distribution panel MAIN circuit breaker 4-18
  testing communications equipment 4-38
  testing power cable 4-36
  testing signal cable 4-37

P

Patch panel connections 2-27
Power cable,
  disconnecting and storing of 4-44
  testing of 4-36
Power cable connector,
  removal and installation of 5-14
Power connections 2-14
Power entrance box 2-5
Power distribution panel indicator glow lamps,
  removal and installation of 3-37
Power indicator lamp,
  removal and installation of 3-36

INDEX (CONT)

Subject	Page
P (CONT)	
Power indicator lamp and lighting controls	2-4
Power receptacle,	
removal and installation of	5-12
Preparation for movement	2-83
Preparation for storage or shipment	4-40
Principles of multiplexing	1-15
Pulse code modulation	1-16
Purpose of equipment	1-1
R	
Receptacle, 26-pair,	
removal, repair, and installation of	6-4
Repair parts, special tools, TMDE, and support equipment	6-1
Reporting equipment improvement recommendations (EIR)	1-2
S	
Security classification markings	1-3
Service upon receipt of materiel	2-9
Shutdown procedures	2-82
Signal cable, 26-pair,	
testing of	6-3
troubleshooting of	6-2
Signal connections	2-19
Single receptacle,	
removal and installation of	4-26
Site and shelter requirements	2-9
Special tools, TMDE, and support equipment	6-1
System planning	2-9
Systems block diagram presentation	1-29
Systems self-test of	
Data Buffer TD-1065/G	2-33
Multiplexer TD-204/U	2-34, 2-36
Multiplexer TD-660(*)/G	2-32, 2-42
Multiplexer TD-754/G	2-35, 2-40
Multiplexer TD-976/G	2-46
Multiplexer TD-1069/G	2-53
Signal entrance box	2-44
Surge arresters,	
removal and installation of	5-16

INDEX (CONT)

Subject Page

T

Table of contents i
Technical principles of operation 1-15
Troubleshooting,
  direct support 5-1
  general support 6-2
  operator 3-1
  organizational 4-2

U

Unloading or loading 2-11
Unpacking 2-10

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TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

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PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

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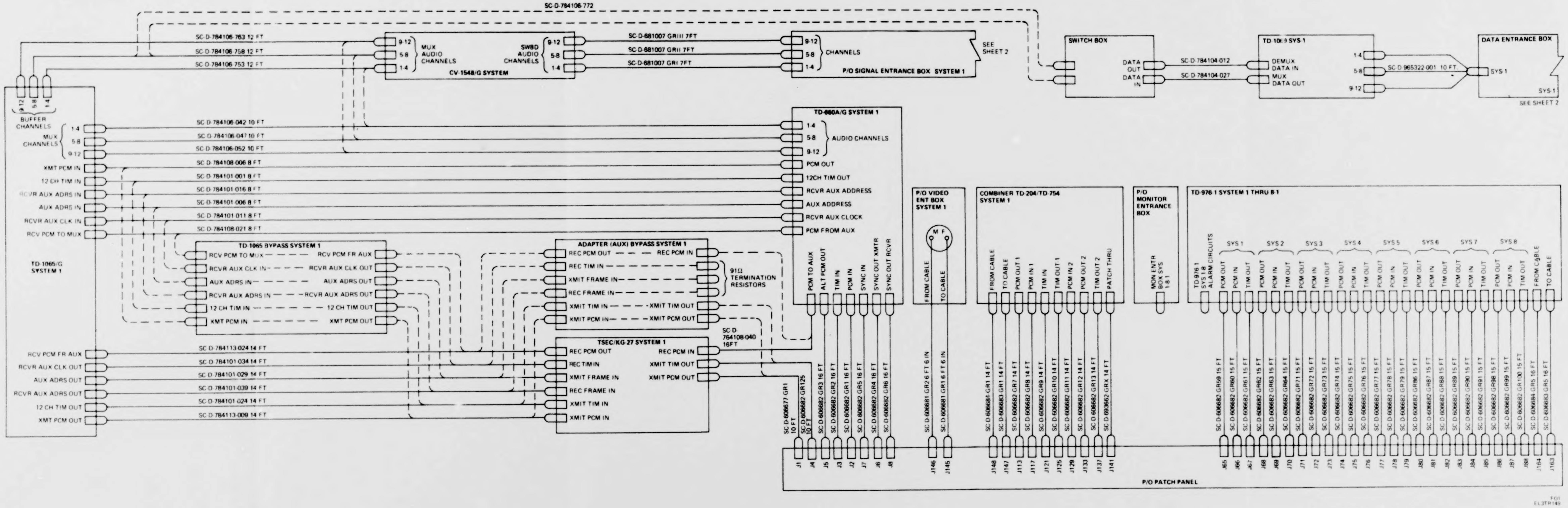
SC-D-784106-772
BUFFER CHANNELS
MUX CHANNELS
TD 1065/G SYSTEM 1
CV-1548/G SYSTEM
MUX AUDIO CHANNELS
SWBD AUDIO CHANNELS
P/O SIGNAL ENTRANCE BOX SYSTEM 1
SEE SHEET 2
SWITCH BOX
DATA OUT
DATA IN
TD 1069 SYS 1
DEMUX DATA IN
MUX DATA OUT
DATA ENTRANCE BOX
SYS 1
SEE SHEET 2
TD-660A/G SYSTEM 1
AUDIO CHANNELS
PCM OUT
12CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
TD 1065 BYPASS SYSTEM 1
ADAPTER (AUX) BYPASS SYSTEM 1
91Ω TERMINATION RESISTORS
TSEC/KG-27 SYSTEM 1
P/O VIDEO ENT BOX SYSTEM 1
COMBINER TD-204/TD-754 SYSTEM 1
P/O MONITOR ENTRANCE BOX
TD-976-1 SYSTEM 1 THRU 8-1
SYS 1
SYS 2
SYS 3
SYS 4
SYS 5
SYS 6
SYS 7
SYS 8
P/O PATCH PANEL
FO1
EL3TR140

SIGNAL SCHEMATIC CABLE DIAGRAM
AN/TCC-73(*) Sheet 1 of 8

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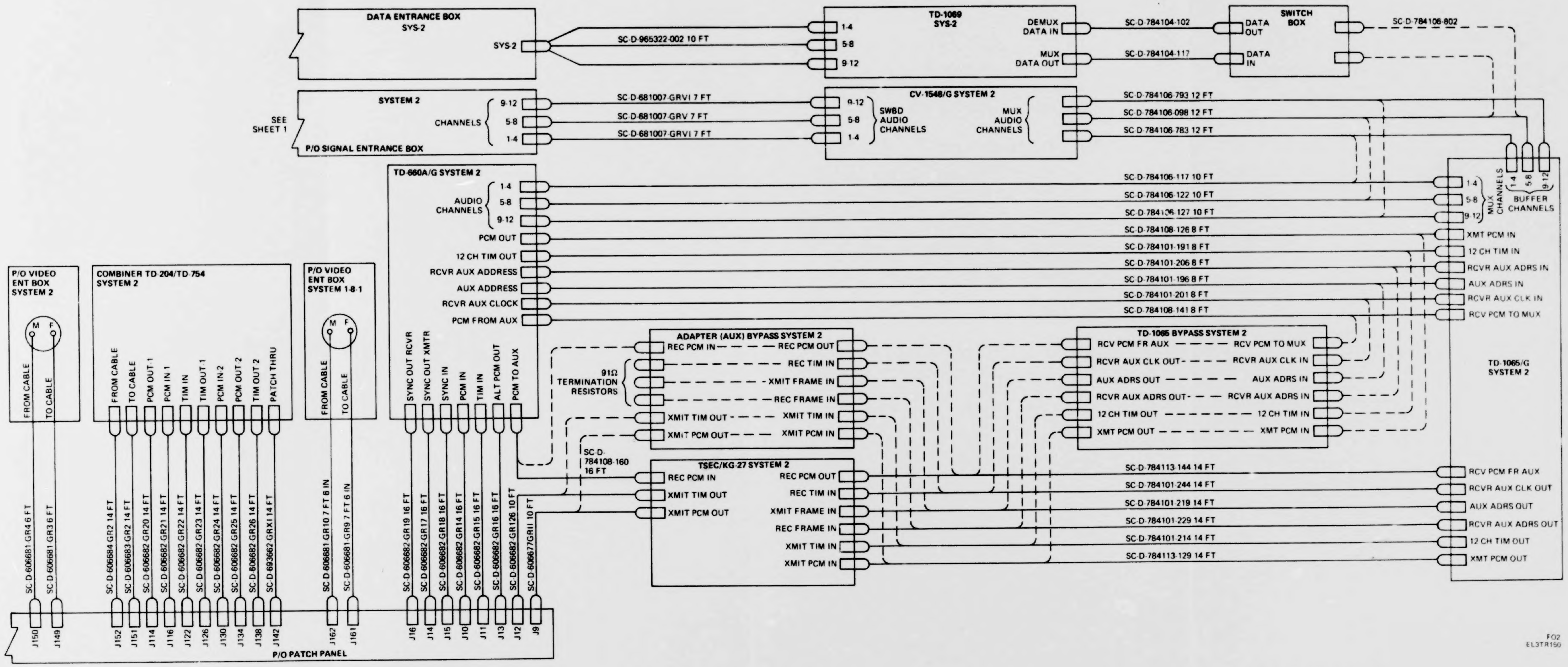
DATA ENTRANCE BOX
SYS-2
SYS-2
SC-D-965322-002 10 FT
TD-1069
SYS-2
1-4
5-8
9-12
DEMUX
DATA IN
MUX
DATA OUT
SC-D-784104-102
SC-D-784104-117
SWITCH
BOX
DATA
OUT
DATA
IN
SC-D-784106-802
SEE
SHEET 1
SYSTEM 2
CHANNELS
9-12
5-8
1-4
P/O SIGNAL ENTRANCE BOX
SC-D-681007-GRVI 7 FT
SC-D-681007-GRV 7 FT
SC-D-681007-GRVI 7 FT
CV-1548/G SYSTEM 2
9-12
5-8
1-4
SWBD
AUDIO
CHANNELS
MUX
AUDIO
CHANNELS
SC-D-784106-793 12 FT
SC-D-784106-098 12 FT
SC-D-784106-783 12 FT
TD-660A/G SYSTEM 2
AUDIO
CHANNELS
1-4
5-8
9-12
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
SYNC OUT RCVR
SYNC OUT XMTR
SYNC IN
PCM IN
TIM IN
ALT PCM OUT
PCM TO AUX
SC-D-784106-117 10 FT
SC-D-784106-122 10 FT
SC-D-784106-127 10 FT
SC-D-784108-126 8 FT
SC-D-784101-191 8 FT
SC-D-784101-206 8 FT
SC-D-784101-196 8 FT
SC-D-784101-201 8 FT
SC-D-784108-141 8 FT
1-4
5-8
9-12
MUX
CHANNELS
1-4
5-8
9-12
BUFFER
CHANNELS
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
TD-1065/G
SYSTEM 2
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC-D-784113-144 14 FT
SC-D-784101-244 14 FT
SC-D-784101-219 14 FT
SC-D-784101-229 14 FT
SC-D-784101-214 14 FT
SC-D-784113-129 14 FT
ADAPTER (AUX) BYPASS SYSTEM 2
REC PCM IN
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM OUT
XMIT TIM IN
XMIT PCM OUT
XMIT PCM IN
91Ω
TERMINATION
RESISTORS
TD-1065 BYPASS SYSTEM 2
RCV PCM FR AUX
RCV PCM TO MUX
RCVR AUX CLK OUT
RCVR AUX CLK IN
AUX ADRS OUT
AUX ADRS IN
RCVR AUX ADRS OUT
RCVR AUX ADRS IN
12 CH TIM OUT
12 CH TIM IN
XMT PCM OUT
XMT PCM IN
SC-D-
784108-160
16 FT
TSEC/KG-27 SYSTEM 2
REC PCM IN
XMIT TIM OUT
XMIT PCM OUT
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
P/O VIDEO
ENT BOX
SYSTEM 2
M
F
FROM CABLE
TO CABLE
COMBINER TD-204/TD-754
SYSTEM 2
FROM CABLE
TO CABLE
PCM OUT-1
PCM IN-1
TIM IN
TIM OUT-1
PCM IN-2
PCM OUT-2
TIM OUT-2
PATCH THRU
P/O VIDEO
ENT BOX
SYSTEM 1-8-1
M
F
FROM CABLE
TO CABLE
SC-D-606681-GR4 6 FT
SC-D-606681-GR3 6 FT
SC-D-606684-GR2 14 FT
SC-D-606683-GR2 14 FT
SC-D-606682-GR20 14 FT
SC-D-606682-GR21 14 FT
SC-D-606682-GR22 14 FT
SC-D-606682-GR23 14 FT
SC-D-606682-GR24 14 FT
SC-D-606682-GR25 14 FT
SC-D-606682-GR26 14 FT
SC-D-693662-GRXI 14 FT
SC-D-606681-GR10 7 FT 6 IN
SC-D-606681-GR9 7 FT 6 IN
SC-D-606682-GR19 16 FT
SC-D-606682-GR17 16 FT
SC-D-606682-GR18 16 FT
SC-D-606682-GR14 16 FT
SC-D-606682-GR15 16 FT
SC-D-606682-GR16 16 FT
SC-D-606682-GR126 10 FT
SC-D-606677GRII 10 FT
J150
J149
J152
J151
J114
J116
J122
J126
J130
J134
J138
J142
J162
J161
J16
J14
J15
J10
J11
J13
J12
J9
P/O PATCH PANEL

FO2
EL3TR150

SIGNAL SCHEMATIC CABLE DIAGRAM
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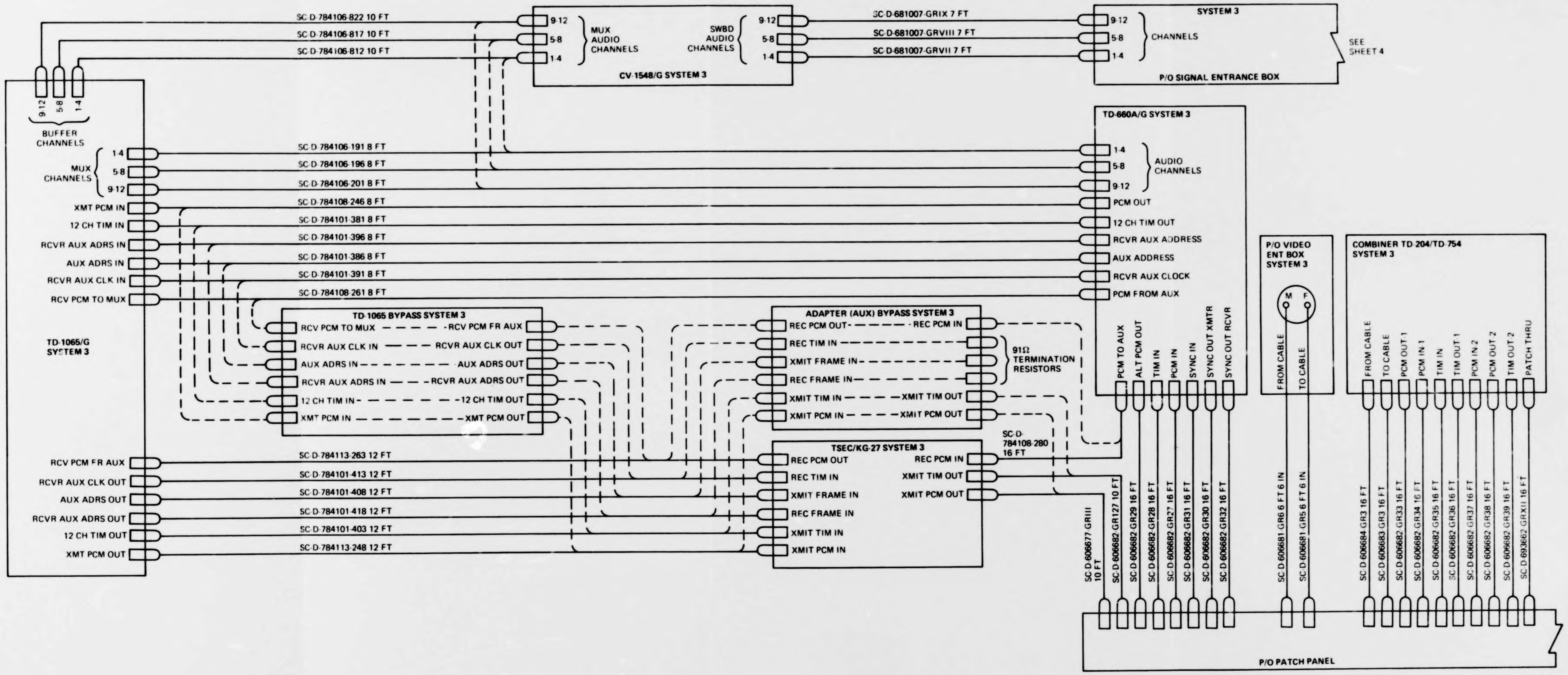
SC-D-784106-822 10 FT
SC-D-784106-817 10 FT
SC-D-784106-812 10 FT
9-12
5-8
1-4
MUX AUDIO CHANNELS
SWBD AUDIO CHANNELS
9-12
5-8
1-4
CV-1548/G SYSTEM 3
SC-D-681007-GRIX 7 FT
SC-D-681007-GRVIII 7 FT
SC-D-681007-GRVII 7 FT
SYSTEM 3
9-12
5-8
1-4
CHANNELS
SEE SHEET 4
P/O SIGNAL ENTRANCE BOX
9-12
5-8
1-4
BUFFER CHANNELS
MUX CHANNELS
1-4
5-8
9-12
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
TD-1065/G SYSTEM 3
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC-D-784106-191 8 FT
SC-D-784106-196 8 FT
SC-D-784106-201 8 FT
SC-D-784108-246 8 FT
SC-D-784101-381 8 FT
SC-D-784101-396 8 FT
SC-D-784101-386 8 FT
SC-D-784101-391 8 FT
SC-D-784108-261 8 FT
TD-660A/G SYSTEM 3
1-4
5-8
9-12
AUDIO CHANNELS
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
PCM TO AUX
ALT PCM OUT
TIM IN
PCM IN
SYNC IN
SYNC OUT XMTR
SYNC OUT RCVR
TD-1065 BYPASS SYSTEM 3
RCV PCM TO MUX
RCV PCM FR AUX
RCVR AUX CLK IN
RCVR AUX CLK OUT
AUX ADRS IN
AUX ADRS OUT
RCVR AUX ADRS IN
RCVR AUX ADRS OUT
12 CH TIM IN
12 CH TIM OUT
XMT PCM IN
XMT PCM OUT
ADAPTER (AUX) BYPASS SYSTEM 3
REC PCM OUT
REC PCM IN
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT TIM OUT
XMIT PCM IN
XMIT PCM OUT
91Ω TERMINATION RESISTORS
SC-D-784113-263 12 FT
SC-D-784101-413 12 FT
SC-D-784101-408 12 FT
SC-D-784101-418 12 FT
SC-D-784101-403 12 FT
SC-D-784113-248 12 FT
TSEC/KG-27 SYSTEM 3
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
REC PCM IN
XMIT TIM OUT
XMIT PCM OUT
SC-D-784108-280 16 FT
P/O VIDEO ENT BOX SYSTEM 3
M
F
FROM CABLE
TO CABLE
COMBINER TD-204/TD-754 SYSTEM 3
FROM CABLE
TO CABLE
PCM OUT-1
PCM IN-1
TIM IN
TIM OUT-1
PCM IN-2
PCM OUT-2
TIM OUT-2
PATCH THRU
SC-D-606677-GRIII 10 FT
SC-D-606682-GR127 10 FT
SC-D-606682-GR29 16 FT
SC-D-606682-GR28 16 FT
SC-D-606682-GR27 16 FT
SC-D-606682-GR31 16 FT
SC-D-606682-GR30 16 FT
SC-D-606682-GR32 16 FT
SC-D-606681-GR6 6 FT 6 IN
SC-D-606681-GR5 6 FT 6 IN
SC-D-606684-GR3 16 FT
SC-D-606683-GR3 16 FT
SC-D-606682-GR33 16 FT
SC-D-606682-GR34 16 FT
SC-D-606682-GR35 16 FT
SC-D-606682-GR36 16 FT
SC-D-606682-GR37 16 FT
SC-D-606682-GR38 16 FT
SC-D-606682-GR39 16 FT
SC-D-693662-GRXII 16 FT
P/O PATCH PANEL

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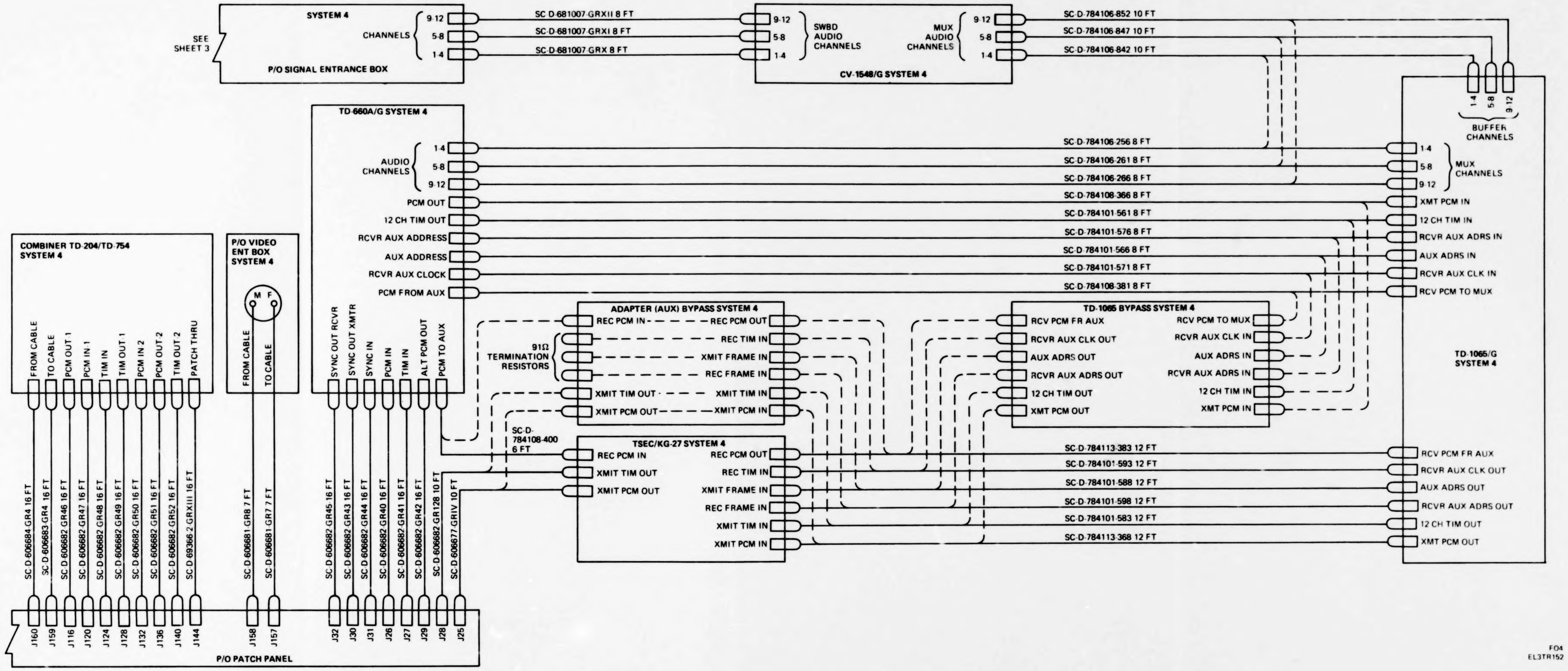
SEE SHEET 3
SYSTEM 4
CHANNELS
9-12
5-8
1-4
P/O SIGNAL ENTRANCE BOX
SC-D-681007-GRXII 8 FT
SC-D-681007-GRXI 8 FT
SC-D-681007-GRX 8 FT
SWBD AUDIO CHANNELS
MUX AUDIO CHANNELS
CV-1548/G SYSTEM 4
SC-D-784106-852 10 FT
SC-D-784106-847 10 FT
SC-D-784106-842 10 FT
BUFFER CHANNELS
TD-660A/G SYSTEM 4
AUDIO CHANNELS
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
SC-D-784106-256 8 FT
SC-D-784106-261 8 FT
SC-D-784106-266 8 FT
SC-D-784108-366 8 FT
SC-D-784101-561 8 FT
SC-D-784101-576 8 FT
SC-D-784101-566 8 FT
SC-D-784101-571 8 FT
SC-D-784108-381 8 FT
MUX CHANNELS
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
TD-1065/G SYSTEM 4
COMBINER TD-204/TD-754 SYSTEM 4
FROM CABLE
TO CABLE
PCM OUT-1
PCM IN-1
TIM IN
TIM OUT-1
PCM IN-2
PCM OUT-2
TIM OUT-2
PATCH THRU
P/O VIDEO ENT BOX SYSTEM 4
M F
FROM CABLE
TO CABLE
SYNC OUT RCVR
SYNC OUT XMTR
SYNC IN
PCM IN
TIM IN
ALT PCM OUT
PCM TO AUX
ADAPTER (AUX) BYPASS SYSTEM 4
REC PCM IN
REC PCM OUT
91Ω TERMINATION RESISTORS
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM OUT
XMIT TIM IN
XMIT PCM OUT
XMIT PCM IN
TD-1065 BYPASS SYSTEM 4
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
RCV PCM TO MUX
RCVR AUX CLK IN
AUX ADRS IN
RCVR AUX ADRS IN
12 CH TIM IN
XMT PCM IN
SC-D-784108-400 6 FT
TSEC/KG-27 SYSTEM 4
REC PCM IN
XMIT TIM OUT
XMIT PCM OUT
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
SC-D-784113-383 12 FT
SC-D-784101-593 12 FT
SC-D-784101-588 12 FT
SC-D-784101-598 12 FT
SC-D-784101-583 12 FT
SC-D-784113-368 12 FT
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC-D-606684-GR4 16 FT
SC-D-606683-GR4 16 FT
SC-D-606682-GR46 16 FT
SC-D-606682-GR47 16 FT
SC-D-606682-GR48 16 FT
SC-D-606682-GR49 16 FT
SC-D-606682-GR50 16 FT
SC-D-606682-GR51 16 FT
SC-D-606682-GR52 16 FT
SC-D-69366-2-GRXIII 16 FT
SC-D-606681-GR8 7 FT
SC-D-606681-GR7 7 FT
SC-D-606682-GR45 16 FT
SC-D-606682-GR43 16 FT
SC-D-606682-GR44 16 FT
SC-D-606682-GR40 16 FT
SC-D-606682-GR41 16 FT
SC-D-606682-GR42 16 FT
SC-D-606682-GR128 10 FT
SC-D-606677-GRIV 10 FT
J160
J159
J116
J120
J124
J128
J132
J136
J140
J144
J158
J157
J32
J30
J31
J26
J27
J29
J28
J25
P/O PATCH PANEL

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SIGNAL SCHEMATIC CABLE DIAGRAM
AN/TCC-73(*) Sheet 4 of 8

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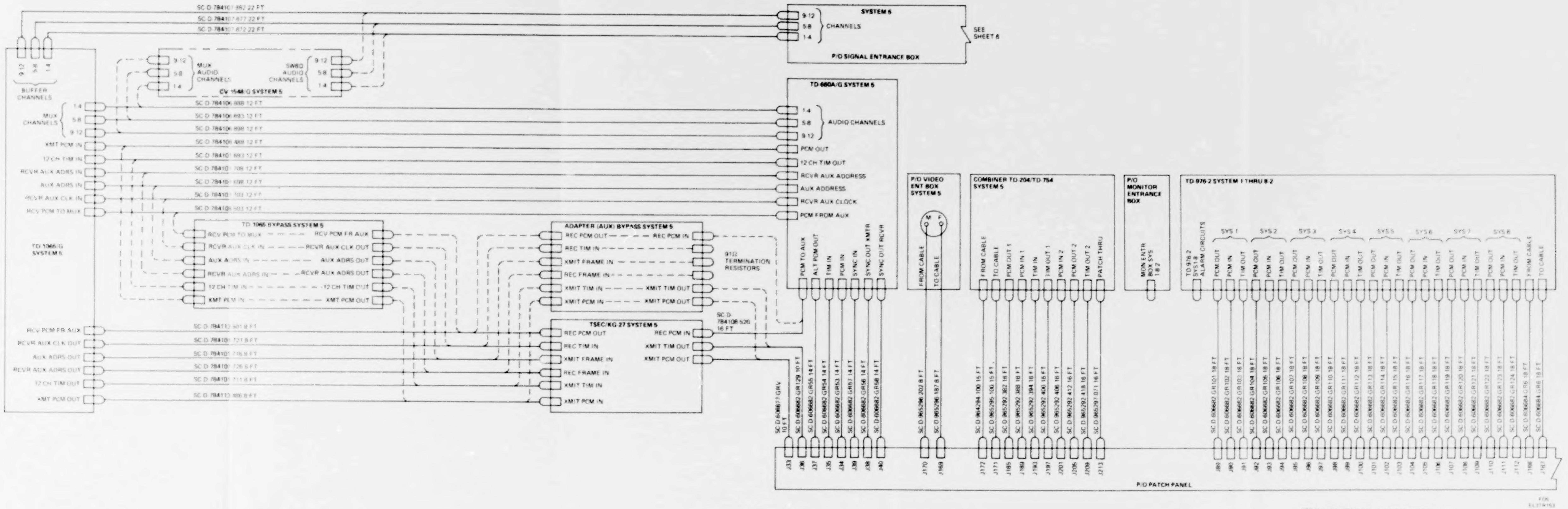
SC D 784107 882 22 FT
SC D 784107 877 22 FT
SC D 784107 872 22 FT
9-12
5-8
1-4
BUFFER CHANNELS
MUX AUDIO CHANNELS
SWBD AUDIO CHANNELS
CV 1548/G SYSTEM 5
SYSTEM 5
CHANNELS
SEE SHEET 6
P/O SIGNAL ENTRANCE BOX
MUX CHANNELS
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
SC D 784108 888 12 FT
SC D 784108 893 12 FT
SC D 784108 898 12 FT
SC D 784108 488 12 FT
SC D 784101 693 12 FT
SC D 784101 708 12 FT
SC D 784101 698 12 FT
SC D 784101 703 12 FT
SC D 784108 503 12 FT
TD 660A/G SYSTEM 5
AUDIO CHANNELS
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
TD 1065/G SYSTEM 5
TD 1065 BYPASS SYSTEM 5
RCV PCM TO MUX
RCV PCM FR AUX
RCVR AUX CLK IN
RCVR AUX CLK OUT
AUX ADRS IN
AUX ADRS OUT
RCVR AUX ADRS IN
RCVR AUX ADRS OUT
12 CH TIM IN
12 CH TIM OUT
XMT PCM IN
XMT PCM OUT
ADAPTER (AUX) BYPASS SYSTEM 5
REC PCM OUT
REC PCM IN
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT TIM OUT
XMIT PCM IN
XMIT PCM OUT
91Ω TERMINATION RESISTORS
SC D 784108 520 16 FT
TSEC/KG-27 SYSTEM 5
REC PCM OUT
REC PCM IN
REC TIM IN
XMIT TIM OUT
XMIT FRAME IN
XMIT PCM OUT
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC D 784113 501 8 FT
SC D 784101 721 8 FT
SC D 784101 716 8 FT
SC D 784101 726 8 FT
SC D 784101 711 8 FT
SC D 784113 486 8 FT
PCM TO AUX
ALT PCM OUT
TIM IN
PCM IN
SYNC IN
SYNC OUT XMTR
SYNC OUT RCVR
SC D 606877 GRV 10 FT
SC D 606682 GR129 10 FT
SC D 606682 GR55 14 FT
SC D 606682 GR54 14 FT
SC D 606682 GR53 14 FT
SC D 606682 GR57 14 FT
SC D 606682 GR56 14 FT
SC D 606682 GR58 14 FT
J33
J36
J37
J35
J34
J39
J38
J40
P/O VIDEO ENT BOX SYSTEM 5
M
F
FROM CABLE
TO CABLE
SC D 965296 202 8 FT
SC D 965296 187 8 FT
J170
J169
COMBINER TD 204/TD 754 SYSTEM 5
FROM CABLE
TO CABLE
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
PATCH THRU
SC D 964204 100 15 FT
SC D 965295 100 15 FT
SC D 965292 382 16 FT
SC D 965292 388 16 FT
SC D 965292 394 16 FT
SC D 965292 400 16 FT
SC D 965292 406 16 FT
SC D 965292 412 16 FT
SC D 965292 418 16 FT
SC D 965297 071 16 FT
J172
J171
J185
J189
J193
J197
J201
J205
J209
J213
P/O MONITOR ENTRANCE BOX
MON ENTR BOX SYS 1 8 2
TD 976-2 SYSTEM 1 THRU 8-2
TD 976-2 SYS 1-8 ALARM CIRCUITS
SYS 1
SYS 2
SYS 3
SYS 4
SYS 5
SYS 6
SYS 7
SYS 8
PCM OUT
PCM IN
TIM OUT
FROM CABLE
TO CABLE
SC D 606682 GR101 18 FT
SC D 606682 GR102 18 FT
SC D 606682 GR103 18 FT
SC D 606682 GR104 18 FT
SC D 606682 GR105 18 FT
SC D 606682 GR106 18 FT
SC D 606682 GR107 18 FT
SC D 606682 GR108 18 FT
SC D 606682 GR109 18 FT
SC D 606682 GR110 18 FT
SC D 606682 GR111 18 FT
SC D 606682 GR112 18 FT
SC D 606682 GR113 18 FT
SC D 606682 GR114 18 FT
SC D 606682 GR115 18 FT
SC D 606682 GR116 18 FT
SC D 606682 GR117 18 FT
SC D 606682 GR118 18 FT
SC D 606682 GR119 18 FT
SC D 606682 GR120 18 FT
SC D 606682 GR121 18 FT
SC D 606682 GR122 18 FT
SC D 606682 GR123 18 FT
SC D 606682 GR124 18 FT
SC D 606684 GR6 18 FT
SC D 606684 GR6 18 FT
J89
J90
J91
J92
J93
J94
J95
J96
J97
J98
J99
J100
J101
J102
J103
J104
J105
J106
J107
J108
J109
J110
J111
J112
J168
J167
P/O PATCH PANEL
FO6
EL3TR153

SIGNAL SCHEMATIC CABLE DIAGRAM
AN/TCC-73(*) Sheet 5 of 8

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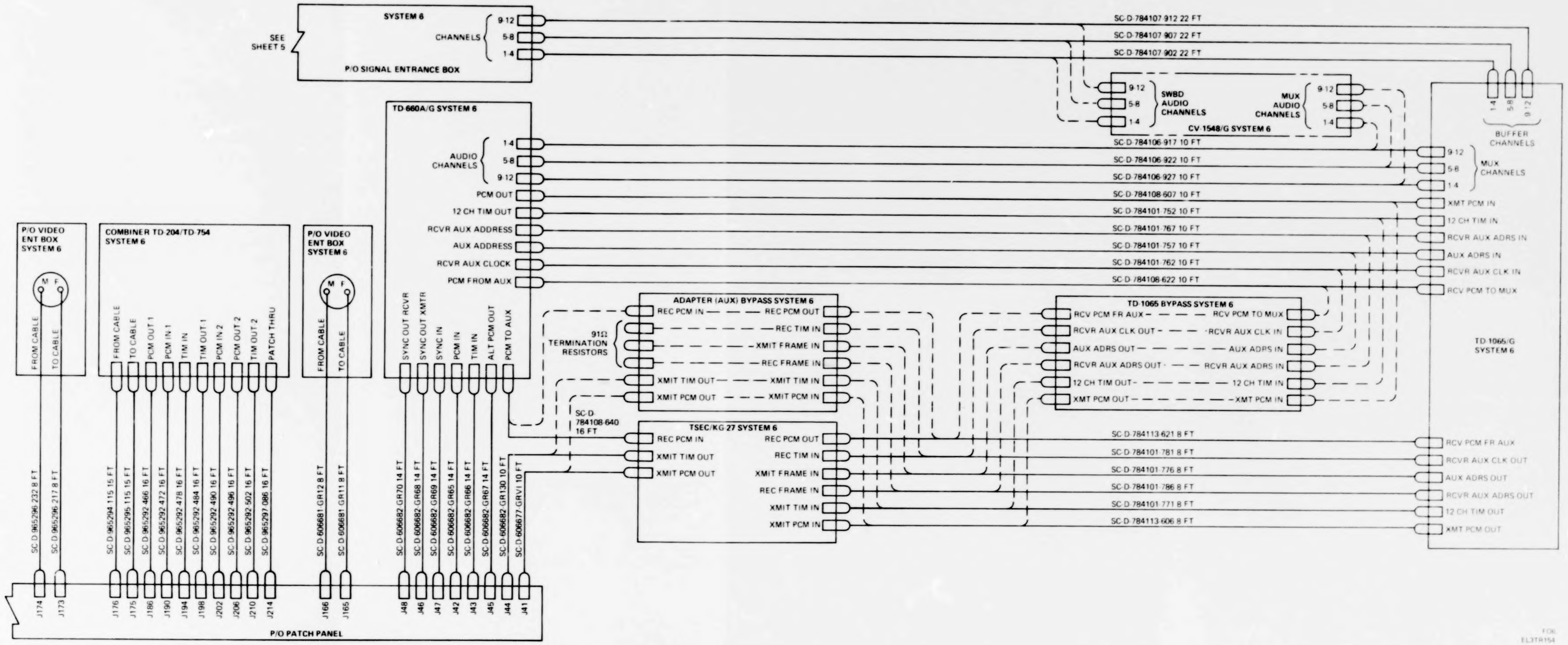
SEE SHEET 5
SYSTEM 6
CHANNELS
9-12
5-8
1-4
P/O SIGNAL ENTRANCE BOX
SC-D-784107-912 22 FT
SC-D-784107-907 22 FT
SC-D-784107-902 22 FT
9-12
5-8
1-4
SWBD AUDIO CHANNELS
MUX AUDIO CHANNELS
9-12
5-8
1-4
CV-1548/G SYSTEM 6
1-4
5-8
9-12
BUFFER CHANNELS
TD-660A/G SYSTEM 6
AUDIO CHANNELS
1-4
5-8
9-12
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
SC-D-784106-917 10 FT
SC-D-784106-922 10 FT
SC-D-784106-927 10 FT
SC-D-784108-607 10 FT
SC-D-784101-752 10 FT
SC-D-784101-767 10 FT
SC-D-784101-757 10 FT
SC-D-784101-762 10 FT
SC-D-784108-622 10 FT
9-12
5-8
1-4
MUX CHANNELS
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
TD-1065/G SYSTEM 6
P/O VIDEO ENT BOX SYSTEM 6
M
F
FROM CABLE
TO CABLE
COMBINER TD-204/TD-754 SYSTEM 6
FROM CABLE
TO CABLE
PCM OUT-1
PCM IN-1
TIM IN
TIM OUT-1
PCM IN-2
PCM OUT-2
TIM OUT-2
PATCH THRU
P/O VIDEO ENT BOX SYSTEM 6
M
F
FROM CABLE
TO CABLE
SYNC OUT RCVR
SYNC OUT XMTR
SYNC IN
PCM IN
TIM IN
ALT PCM OUT
PCM TO AUX
ADAPTER (AUX) BYPASS SYSTEM 6
REC PCM IN
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM OUT
XMIT TIM IN
XMIT PCM OUT
XMIT PCM IN
91Ω TERMINATION RESISTORS
TD-1065 BYPASS SYSTEM 6
RCV PCM FR AUX
RCV PCM TO MUX
RCVR AUX CLK OUT
RCVR AUX CLK IN
AUX ADRS OUT
AUX ADRS IN
RCVR AUX ADRS OUT
RCVR AUX ADRS IN
12 CH TIM OUT
12 CH TIM IN
XMT PCM OUT
XMT PCM IN
SC-D-784108-640 16 FT
TSEC/KG-27 SYSTEM 6
REC PCM IN
XMIT TIM OUT
XMIT PCM OUT
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
SC-D-784113-621 8 FT
SC-D-784101-781 8 FT
SC-D-784101-776 8 FT
SC-D-784101-786 8 FT
SC-D-784101-771 8 FT
SC-D-784113-606 8 FT
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC-D-965296-232 8 FT
SC-D-965296-217 8 FT
SC-D-965294-115 15 FT
SC-D-965295-115 15 FT
SC-D-965292-466 16 FT
SC-D-965292-472 16 FT
SC-D-965292-478 16 FT
SC-D-965292-484 16 FT
SC-D-965292-490 16 FT
SC-D-965292-496 16 FT
SC-D-965292-502 16 FT
SC-D-965297-086 16 FT
SC-D-606681-GR12 8 FT
SC-D-606681-GR11 8 FT
SC-D-606682-GR70 14 FT
SC-D-606682-GR68 14 FT
SC-D-606682-GR69 14 FT
SC-D-606682-GR65 14 FT
SC-D-606682-GR66 14 FT
SC-D-606682-GR67 14 FT
SC-D-606682-GR130 10 FT
SC-D-606677-GRVI 10 FT
J174
J173
J176
J175
J186
J190
J194
J198
J202
J206
J210
J214
J166
J165
J48
J46
J47
J42
J43
J45
J44
J41
P/O PATCH PANEL
FO6
EL3TR154

SIGNAL SCHEMATIC CABLE DIAGRAM
AN/TCC-73(*) Sheet 6 of 8

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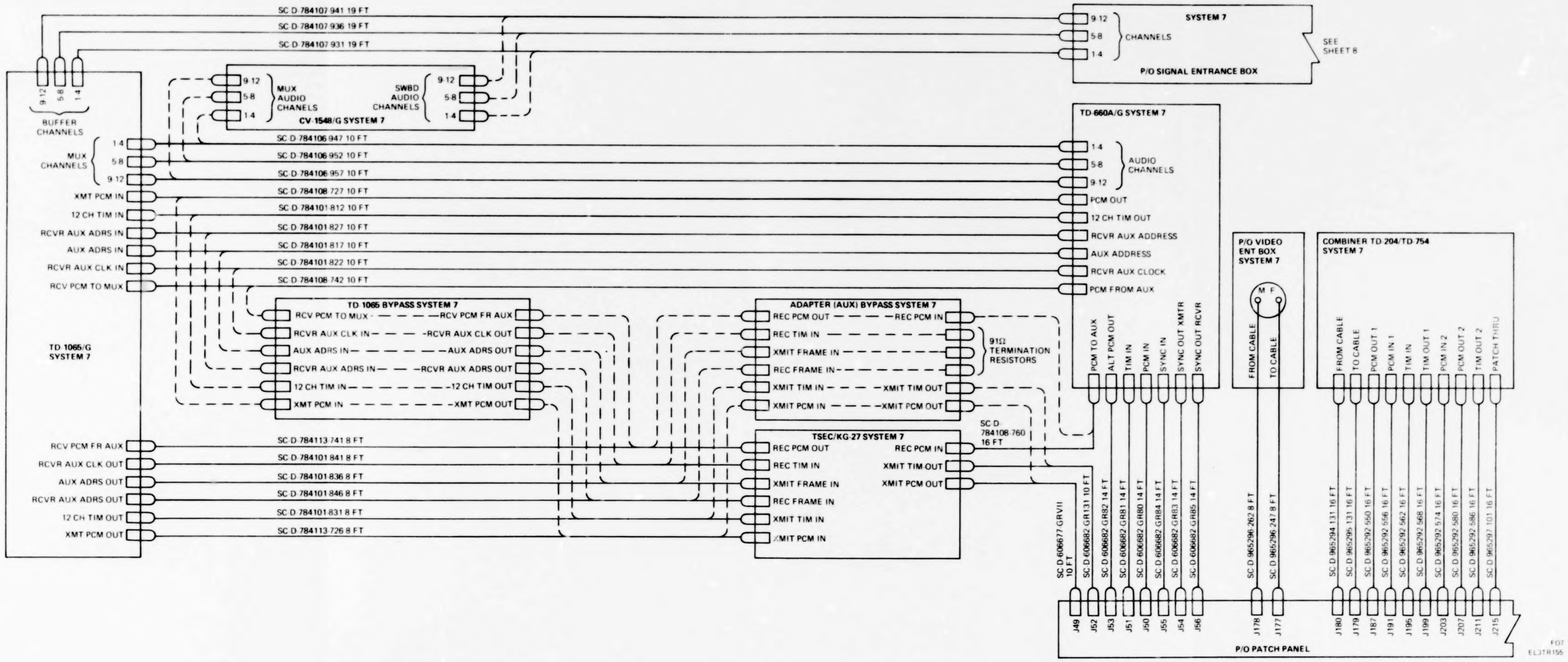
SC D 784107 941 19 FT
SC D 784107 936 19 FT
SC D 784107 931 19 FT
SYSTEM 7
9-12
5-8
1-4
CHANNELS
SEE SHEET 8
P/O SIGNAL ENTRANCE BOX
9-12
5-8
1-4
BUFFER CHANNELS
9-12
5-8
1-4
MUX AUDIO CHANELS
SWBD AUDIO CHANNELS
9-12
5-8
1-4
CV-1548/G SYSTEM 7
MUX CHANNELS
1-4
5-8
9-12
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
SC D 784106 947 10 FT
SC D 784106 952 10 FT
SC D 784106 957 10 FT
SC D 784108 727 10 FT
SC D 784101 812 10 FT
SC D 784101 827 10 FT
SC D 784101 817 10 FT
SC D 784101 822 10 FT
SC D 784108 742 10 FT
TD 660A/G SYSTEM 7
1-4
5-8
9-12
AUDIO CHANNELS
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
PCM TO AUX
ALT PCM OUT
TIM IN
PCM IN
SYNC IN
SYNC OUT XMTR
SYNC OUT RCVR
TD 1065/G SYSTEM 7
TD 1065 BYPASS SYSTEM 7
RCV PCM TO MUX
RCV PCM FR AUX
RCVR AUX CLK IN
RCVR AUX CLK OUT
AUX ADRS IN
AUX ADRS OUT
RCVR AUX ADRS IN
RCVR AUX ADRS OUT
12 CH TIM IN
12 CH TIM OUT
XMT PCM IN
XMT PCM OUT
ADAPTER (AUX) BYPASS SYSTEM 7
REC PCM OUT
REC PCM IN
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT TIM OUT
XMIT PCM IN
XMIT PCM OUT
91Ω TERMINATION RESISTORS
P/O VIDEO ENT BOX SYSTEM 7
M F
FROM CABLE
TO CABLE
COMBINER TD 204/TD 754 SYSTEM 7
FROM CABLE
TO CABLE
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
PATCH THRU
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC D 784113 741 8 FT
SC D 784101 841 8 FT
SC D 784101 836 8 FT
SC D 784101 846 8 FT
SC D 784101 831 8 FT
SC D 784113 726 8 FT
TSEC/KG-27 SYSTEM 7
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
REC PCM IN
XMIT TIM OUT
XMIT PCM OUT
SC D 784108 760 16 FT
SC D 606677 GRVII 10 FT
SC D 606682 GR131 10 FT
SC D 606682 GR82 14 FT
SC D 606682 GR81 14 FT
SC D 606682 GR80 14 FT
SC D 606682 GR84 14 FT
SC D 606682 GR83 14 FT
SC D 606682 GR85 14 FT
SC D 965296 262 8 FT
SC D 965296 247 8 FT
SC D 965294 131 16 FT
SC D 965295 131 16 FT
SC D 965292 550 16 FT
SC D 965292 556 16 FT
SC D 965292 562 16 FT
SC D 965292 568 16 FT
SC D 965292 574 16 FT
SC D 965292 580 16 FT
SC D 965292 586 16 FT
SC D 965297 101 16 FT
J49
J52
J53
J51
J50
J55
J54
J56
J178
J177
J180
J179
J187
J191
J195
J199
J203
J207
J211
J215
P/O PATCH PANEL
FO7
EL3TR155

SIGNAL SCHEMATIC CABLE DIAGRAM
AN/TCC-73(*) Sheet 7 of 8

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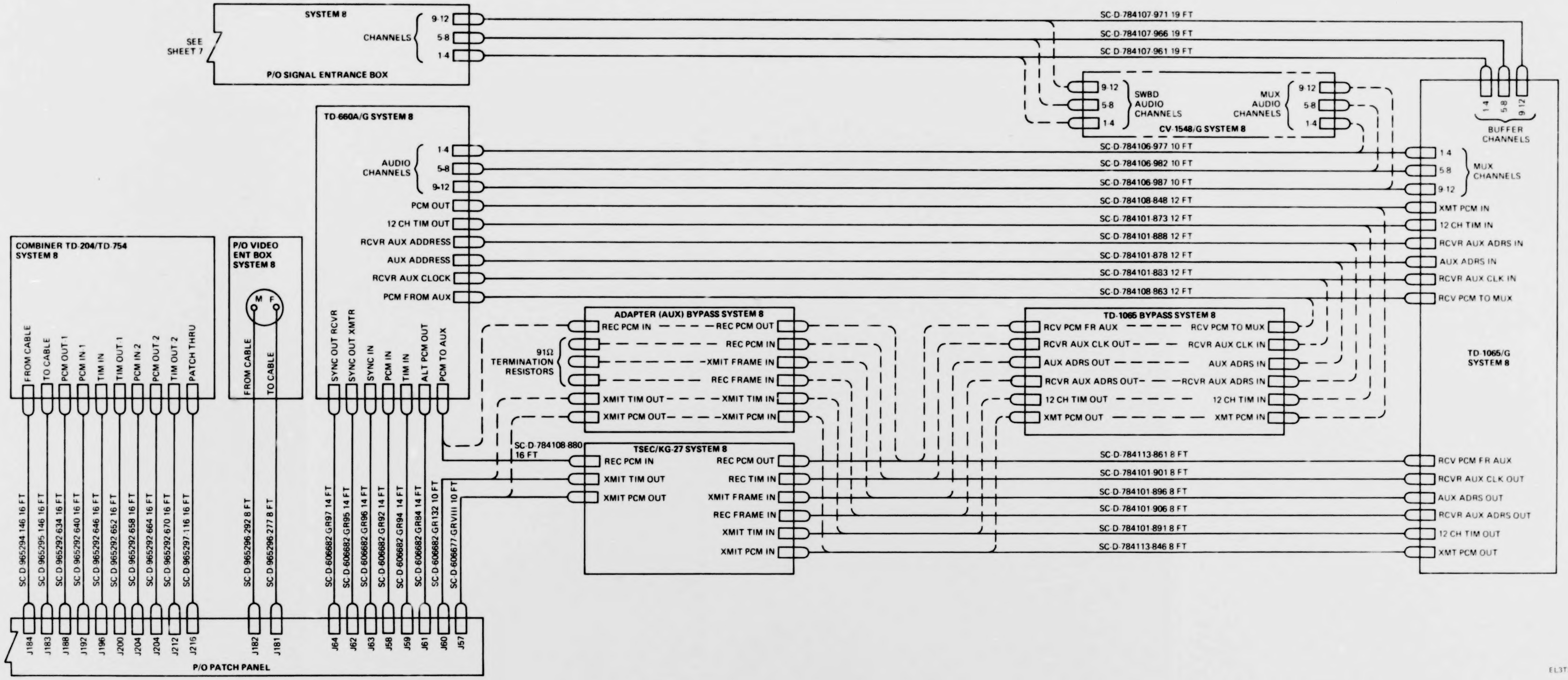
SEE SHEET 7
SYSTEM 8
CHANNELS
9-12
5-8
1-4
P/O SIGNAL ENTRANCE BOX
SC-D-784107-971 19 FT
SC-D-784107-966 19 FT
SC-D-784107-961 19 FT
SWBD AUDIO CHANNELS
MUX AUDIO CHANNELS
CV-1548/G SYSTEM 8
BUFFER CHANNELS
TD-660A/G SYSTEM 8
AUDIO CHANNELS
PCM OUT
12 CH TIM OUT
RCVR AUX ADDRESS
AUX ADDRESS
RCVR AUX CLOCK
PCM FROM AUX
SC-D-784106-977 10 FT
SC-D-784106-982 10 FT
SC-D-784106-987 10 FT
SC-D-784108-848 12 FT
SC-D-784101-873 12 FT
SC-D-784101-888 12 FT
SC-D-784101-878 12 FT
SC-D-784101-883 12 FT
SC-D-784108-863 12 FT
MUX CHANNELS
XMT PCM IN
12 CH TIM IN
RCVR AUX ADRS IN
AUX ADRS IN
RCVR AUX CLK IN
RCV PCM TO MUX
TD-1065/G SYSTEM 8
COMBINER TD-204/TD-754 SYSTEM 8
FROM CABLE
TO CABLE
PCM OUT 1
PCM IN 1
TIM IN
TIM OUT 1
PCM IN 2
PCM OUT 2
TIM OUT 2
PATCH THRU
P/O VIDEO ENT BOX SYSTEM 8
M
F
FROM CABLE
TO CABLE
SYNC OUT RCVR
SYNC OUT XMTR
SYNC IN
PCM IN
TIM IN
ALT PCM OUT
PCM TO AUX
ADAPTER (AUX) BYPASS SYSTEM 8
REC PCM IN
REC PCM OUT
REC PCM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM OUT
XMIT TIM IN
XMIT PCM OUT
XMIT PCM IN
91Ω TERMINATION RESISTORS
TD-1065 BYPASS SYSTEM 8
RCV PCM FR AUX
RCV PCM TO MUX
RCVR AUX CLK OUT
RCVR AUX CLK IN
AUX ADRS OUT
AUX ADRS IN
RCVR AUX ADRS OUT
RCVR AUX ADRS IN
12 CH TIM OUT
12 CH TIM IN
XMT PCM OUT
XMT PCM IN
SC-D-784108-880 16 FT
TSEC/KG-27 SYSTEM 8
REC PCM IN
XMIT TIM OUT
XMIT PCM OUT
REC PCM OUT
REC TIM IN
XMIT FRAME IN
REC FRAME IN
XMIT TIM IN
XMIT PCM IN
SC-D-784113-861 8 FT
SC-D-784101-901 8 FT
SC-D-784101-896 8 FT
SC-D-784101-906 8 FT
SC-D-784101-891 8 FT
SC-D-784113-846 8 FT
RCV PCM FR AUX
RCVR AUX CLK OUT
AUX ADRS OUT
RCVR AUX ADRS OUT
12 CH TIM OUT
XMT PCM OUT
SC-D-965294-146 16 FT
SC-D-965295-146 16 FT
SC-D-965292-634 16 FT
SC-D-965292-640 16 FT
SC-D-965292-646 16 FT
SC-D-965292-652 16 FT
SC-D-965292-658 16 FT
SC-D-965292-664 16 FT
SC-D-965292-670 16 FT
SC-D-965297-116 16 FT
SC-D-965296-292 8 FT
SC-D-965296-277 8 FT
SC-D-606682-GR97 14 FT
SC-D-606682-GR95 14 FT
SC-D-606682-GR96 14 FT
SC-D-606682-GR92 14 FT
SC-D-606682-GR94 14 FT
SC-D-606682-GR84 14 FT
SC-D-606682-GR132 10 FT
SC-D-606677-GRVIII 10 FT
J184
J183
J188
J192
J196
J200
J204
J204
J212
J216
J182
J181
J64
J62
J63
J58
J59
J61
J60
J57
P/O PATCH PANEL
FO8
EL3TR156

SIGNAL SCHEMATIC CABLE DIAGRAM
AN/TCC-73(*) Sheet 8 of 8

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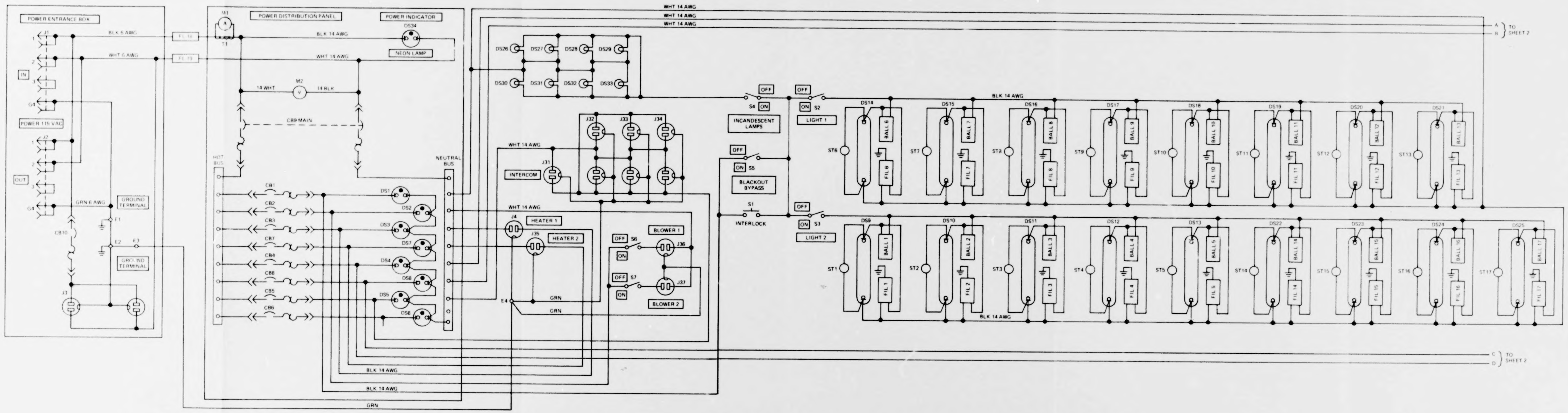
POWER ENTRANCE BOX
J1
1
2
IN
3
G4
POWER 115 VAC
J2
1
2
OUT
3
G4
BLK 6 AWG
WHT 6 AWG
GRN 6 AWG
GROUND TERMINAL
E1
CB10
E2
E3
GROUND TERMINAL
J3
FL 18
FL 19
M1
A
T1
POWER DISTRIBUTION PANEL
POWER INDICATOR
DS34
NEON LAMP
BLK 14 AWG
WHT 14 AWG
M2
14 WHT
V
14 BLK
CB9 MAIN
HOT BUS
NEUTRAL BUS
CB1
CB2
CB3
CB7
CB4
CB8
CB5
CB6
DS1
DS2
DS3
DS7
DS4
DS8
DS5
DS6
BLK 14 AWG
BLK 14 AWG
GRN
WHT 14 AWG
WHT 14 AWG
WHT 14 AWG
DS26
DS27
DS28
DS29
DS30
DS31
DS32
DS33
J32
J33
J34
WHT 14 AWG
J31
INTERCOM
WHT 14 AWG
J4
HEATER 1
J35
HEATER 2
E4
GRN
GRN
OFF
S6
ON
BLOWER 1
J36
OFF
S7
ON
J37
BLOWER 2
OFF
S4
ON
INCANDESCENT LAMPS
OFF
ON
S5
BLACKOUT BYPASS
S1
INTERLOCK
OFF
ON
S2
LIGHT 1
OFF
ON
S3
LIGHT 2
BLK 14 AWG
DS14
DS15
DS16
DS17
DS18
DS19
DS20
DS21
ST6
ST7
ST8
ST9
ST10
ST11
ST12
ST13
BALL 6
BALL 7
BALL 8
BALL 9
BALL 10
BALL 11
BALL 12
BALL 13
FIL 6
FIL 7
FIL 8
FIL 9
FIL 10
FIL 11
FIL 12
FIL 13
DS9
DS10
DS11
DS12
DS13
DS22
DS23
DS24
DS25
ST1
ST2
ST3
ST4
ST5
ST14
ST15
ST16
ST17
BALL 1
BALL 2
BALL 3
BALL 4
BALL 5
BALL 14
BALL 15
BALL 16
BALL 17
FIL 1
FIL 2
FIL 3
FIL 4
FIL 5
FIL 14
FIL 15
FIL 16
FIL 17
BLK 14 AWG
A
B
TO SHEET 2
C
D
TO SHEET 2

F09
EL3TR176

AC DISTRIBUTION, SCHEMATIC - WIRING DIAGRAM
AN/TCC-73(*) Sheet 1 of 2

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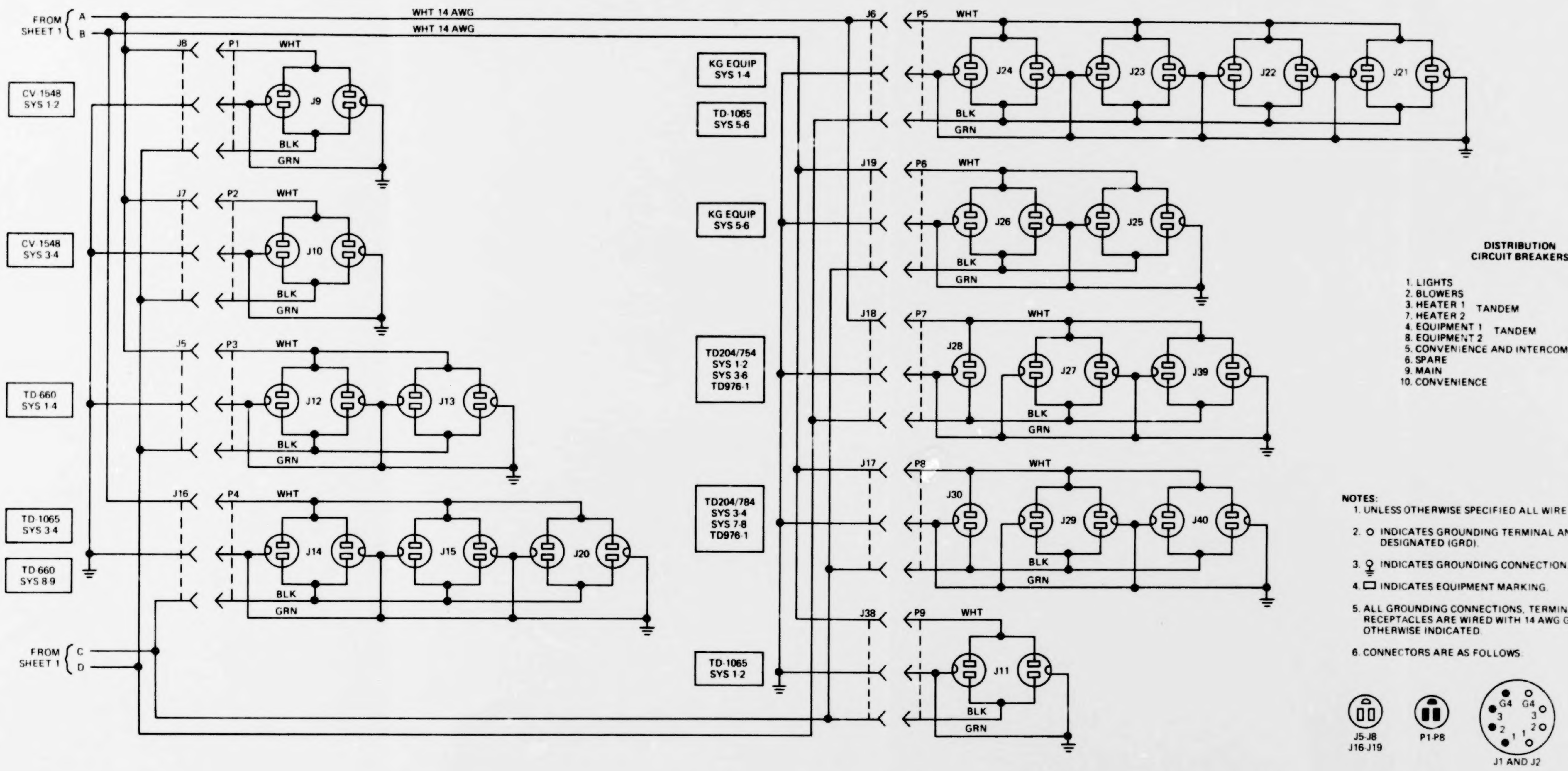
FROM SHEET 1
A
B
WHT 14 AWG
WHT 14 AWG
C
D
FROM SHEET 1
CV 1548 SYS 1-2
CV 1548 SYS 3-4
TD 660 SYS 1-4
TD 1065 SYS 3-4
TD 660 SYS 8-9
KG EQUIP SYS 1-4
TD-1065 SYS 5-6
KG EQUIP SYS 5-6
TD204/754 SYS 1-2 SYS 3-6 TD976-1
TD204/784 SYS 3-4 SYS 7-8 TD976-1
TD 1065 SYS 1-2
J8
P1
J9
J7
P2
J10
J5
P3
J12
J13
J16
P4
J14
J15
J20
J6
P5
J24
J23
J22
J21
J19
P6
J26
J25
J18
P7
J28
J27
J39
J17
P8
J30
J29
J40
J38
P9
J11
WHT
BLK
GRN
J5-J8
J16-J19
P1-P8
G4
3
2
1
J1 AND J2

DISTRIBUTION
CIRCUIT BREAKERS

1. LIGHTS		15A
2. BLOWERS		15A
3. HEATER 1	TANDEM	20A
7. HEATER 2		20A
4. EQUIPMENT 1	TANDEM	20A
8. EQUIPMENT 2		20A
5. CONVENIENCE AND INTERCOM		20A
6. SPARE		20A
9. MAIN		60A
10. CONVENIENCE		10A

NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL WIRE IS 12 AWG.
2. ○ INDICATES GROUNDING TERMINAL AND IS SO DESIGNATED (GRD).
3. ⏚ INDICATES GROUNDING CONNECTION.
4. ▭ INDICATES EQUIPMENT MARKING.
5. ALL GROUNDING CONNECTIONS, TERMINALS AND RECEPTACLES ARE WIRED WITH 14 AWG GREEN UNLESS OTHERWISE INDICATED.
6. CONNECTORS ARE AS FOLLOWS.

FO10
EL3TR177

AC DISTRIBUTION, SCHEMATIC - WIRING DIAGRAM
AN/TCC-73(*) Sheet 2 of 2

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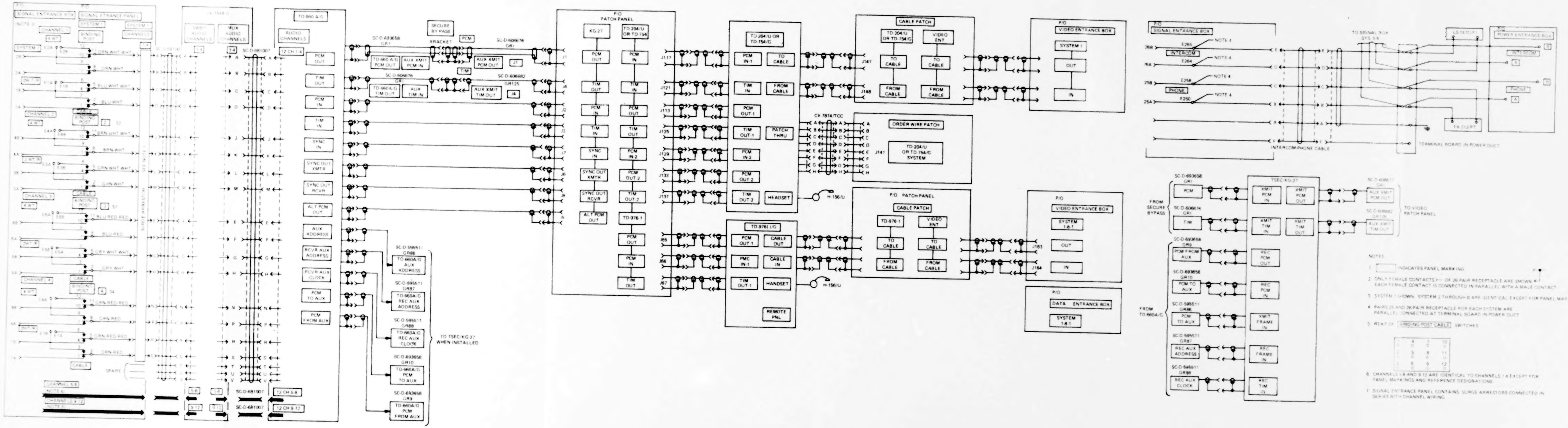
SIGNAL ENTRANCE PANEL
TO 660 A/G
AUDIO CHANNELS
12 CH 1-4
SC-D-681007
SECURE BY-PASS BRACKET
PCM
TIM
SC-D-693658 GR1
SC-D-606676 GR1
SC-D-606682 GR125
TD-660 A/G PCM OUT
AUX XMIT PCM IN
TD-660A/G TIM OUT
AUX XMIT TIM IN
AUX XMIT PCM OUT
AUX XMIT TIM OUT
P/O PATCH PANEL
KG-27
TD-204/U OR TD-754
PCM OUT
PCM IN
TIM OUT
TIM IN
SYNC IN
SYNC OUT XMTR
SYNC OUT RCVR
ALT PCM OUT
AUX ADDRESS
RCVR AUX ADDRESS
RCVR AUX CLOCK
PCM TO AUX
PCM FROM AUX
TO TSEC/KG-27 WHEN INSTALLED
TD-976 1
TD-204/U OR TD-754/G
TO CABLE
FROM CABLE
PATCH THRU
HEADSET
H-156/U
CX-7874/TCC
TD-976 I/G
HANDSET
REMOTE PNL
CABLE PATCH
VIDEO ENT
ORDER WIRE PATCH
TD-204/U OR TD-754/G SYSTEM
P/O PATCH PANEL
P/O VIDEO ENTRANCE BOX
SYSTEM 1
OUT
IN
SYSTEM 1-8
P/O DATA ENTRANCE BOX
SYSTEM 1-8 1
P/O SIGNAL ENTRANCE BOX
INTERCOM
PHONE
NOTE 4
TO SIGNAL BOX SYS 5-8
POWER ENTRANCE BOX
INTERCOM PHONE CABLE
TERMINAL BOARD IN POWER DUCT
FROM SECURE BYPASS
TSEC/KG-27
XMIT PCM IN
XMIT PCM OUT
XMIT TIM IN
XMIT TIM OUT
TO VIDEO PATCH PANEL
FROM TD-660A/G
PCM FROM AUX
PCM TO AUX
REC AUX ADDRESS
REC AUX CLOCK
REC PCM OUT
REC PCM IN
XMIT FRAME IN
REC FRAME IN
REC TIM IN

NOTES

1. ☐ INDICATES PANEL MARKING
2. ONLY FEMALE CONTACTS ≻— OF 26 PAIR RECEPTACLE ARE SHOWN. EACH FEMALE CONTACT IS CONNECTED IN PARALLEL WITH A MALE CONTACT.
3. SYSTEM 1 SHOWN. SYSTEM 2 THROUGH 8 ARE IDENTICAL EXCEPT FOR PANEL MARKINGS.
4. PAIRS 25 AND 26 PAIR RECEPTACLE FOR EACH SYSTEM ARE PARALLEL CONNECTED AT TERMINAL BOARD IN POWER DUCT.
5. REAR OF BINDING POST CABLE SWITCHES

1	4	7	10
2	5	8	11
3	6	9	12

6. CHANNELS 5-8 AND 9-12 ARE IDENTICAL TO CHANNELS 1-4 EXCEPT FOR PANEL MARKINGS AND REFERENCE DESIGNATIONS.
7. SIGNAL ENTRANCE PANEL CONTAINS SURGE ARRESTORS CONNECTED IN SERIES WITH CHANNEL WIRING.

FO11
EL3TR256

SIGNAL SCHEMEATIC, WIRING DIAGRAM AN/TCC-73(*)

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